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# THE GAS JOURNAL

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## *A Glance at the Contents—*

**Beauty of the Gasholder.**

A photograph of the new gasholder of the Gas Light and Coke Company at Richmond shows that appropriate painting can result in a "blending into the skyline."

**Influence of Coal Size on Gas Manufacture.**

This is the subject of Department of Scientific and Industrial Research, Fuel Research, Technical Paper No. 26, which is reviewed in our columns to-day. Our reviewer states that the paper is one of extraordinary interest to the carbonizer, though he will need some ingenuity to deduce from the data given what results he would be likely to obtain in practice.

**Classification of Coals.**

A. Meurice (Bulletin de l'Association des Gaziers Belges) gives a review of the experience gained during the course of nearly twenty years which have elapsed since his original papers on the subject were published. In order that the new developments may be appreciated, the method of obtaining the agglutinating index and the manufacturing index is briefly described.

**Benzole from Vertical Retorts.**

We commence publication of a contribution by Mr. W. A. Voss, of the Gas Light and Coke Company, which originally appeared in the Journal of the Society of Chemical Industry (Aug. 15). The work to be described was undertaken in order to determine the quality and quantity of benzole present in the gas made in continuously-operated vertical retorts working under normal conditions and representative of the make over a continuous period of several weeks.

**Collin Ovens at Pont Brûlé.**

Les Cokeries du Brabant, a subsidiary Company of the Imperial Gas Association, are extending their carbonizing plant by the installation of Collin ovens having a daily capacity of 1200 tons of coal. The design and operation of this plant are explained on a later page to-day. An interesting feature of the Collin plant is that all the flues are flame heated all the time, first upwards and then—on reversal—downwards, with resultant low consumption of fuel per unit of coal throughput.

**The Coal Mines Act, 1930.**

We give a synopsis of the Act, specially compiled for gas undertakings, together with observations on how the new provisions will affect our industry. Gas coal users may be advised to keep a careful written diary as to their experiences in the matter of pricing, making contracts, deliveries, &c., when such adversely affect their interests, so that information may be promptly available which will support any representation or complaint on the subject. Dates and confirmatory evidence will form a useful adjunct to the record suggested.

**Removal of CO from Town Gas.**

In our "Continental Notes" will be found an outline of the large experimental factory (capacity 14,000 c.ft. per hour) of the Harpener Bergbauverein for the removal of carbon monoxide from gas. This is of interest in connection with investigations as to the possibility of eliminating this constituent from town gas. Lime is used, and the reaction is carried at a temperature of 500°-600° C. The organic sulphur compounds are converted into sulphuretted hydrogen, and the carbon monoxide content is reduced to below 1 p.ct. The lime is regenerated at 800°-900° C. in presence of hot air. Regeneration requires six hours, and for each cubic foot of gas treated, one-third of a cubic foot of crude gas is consumed. The cost is 2·8d. per 1000 c.ft. of gas treated if the hot blow gas of a water gas plant or blast furnace gas is employed.

**Irish Association of Gas Managers.**

We publish a report of this Association's annual meeting in Dublin, which took place last week under the Presidency of Mr. W. J. Buckley, of Tralee. Mr. L. W. Dalby (Past-President), in presenting to Mr. Buckley the Association's medal, remarked that in Ireland they were inclined to think they had a peculiar burden to bear in competing against State-aided electricity supply, but their difficulties were by no means unique. There were parts of Great Britain where tenants of municipally-owned houses were not allowed to have a gas supply. A recent question in Parliament elicited the fact that at least 80,000 householders were definitely barred from using gas, although wishing to do so. They in Ireland were at least free to supply all who asked for gas.

**Irish District Board of the "N.G.C."**

The annual meeting of the Irish Association was followed, as usual, by a meeting of the Irish District Executive Board of the National Gas Council. The address of Mr. E. J. Fottrell, Joint Manager of the "N.G.C.," is published. It deals with the Coal Mines Act, with the threat which Ireland suffered as a result of the formation of an Irish Coal Marketing Scheme, and with gas prices. Mr. Fottrell said he was sufficiently optimistic to hope that next spring the British Parliament will introduce a Bill putting the gas industry upon an equality with electric supply undertakings in regard to charging. He feels satisfied that the Free State Government are prepared to introduce a similar measure, and that the Government of Northern Ireland are equally friendly disposed.

**Work of the "B.C.G.A."**

At the meeting of the Irish Association of Gas Managers, Mr. J. C. Walker, Secretary of the British Commercial Gas Association, dealt with the work of the "B.C.G.A." during the year ended August, 1930. He referred to a Scheme of Education for Salesmen which the Association are formulating and which they hope to launch in the New Year. The scheme will aim at providing a sound correspondence course of education, and will thus be available to every gas salesman irrespective of geographical domain. An outline of the scheme will be presented to the members of the "B.C.G.A." at the Annual Conference in Hull in October next.

**Competition in Ireland.**

Mr. F. J. Edmonds, of Waterford, dealt with electrical competition in Ireland in a paper which he read before the Irish Association of Gas Managers last week. He urges that some form of showroom activity is really a moral duty of every gas undertaking, and he puts forward the view that, while it may not be possible for every gas company in Ireland to own an attractive showroom staffed with well-trained attendants, some good could be achieved by co-operation with local tradesmen to the extent of hiring windows, or arranging for space for the exhibit of gas appliances in shops.

**South Yorkshire Gas Grid.**

An important step has been taken by the Sheffield Gas Company in the proposed application for a Special Gas Order, the main objects of which are to provide for the definition of an area of supply, for the raising of the necessary capital, for the manner of keeping the accounts between the gas network controllers and their customers, and various other matters in connection with the general supply of coke oven gas in South Yorkshire. The first few clauses in the Draft Order provide for the extension of the Company's limits in a number of their existing gas areas, and for the inclusion in their area of supply of coke oven gas other districts not at the present moment within their area; these include the whole of the two County Boroughs of Rotherham and Barnsley, and a number of urban and rural districts.

# EDITORIAL NOTES

## *The Irish Meeting*

THE Annual Meeting of the Irish Association of Gas Managers, which this year was held in Dublin, was characterized by the number of practical and essentially topical questions which were thoroughly well discussed. Doubtless the keen and increasing competition from electricity has whetted the desire to make the gas dog bark, instead of allowing it to lie sleeping. Ireland needs a lot of this barking; this is obvious from the Presidential Address by Mr. W. J. Buckley, which was published in the "JOURNAL" last week, from the paper by Mr. F. J. Edmonds, reprinted in our issue to-day, and from our reports both of the meeting proper and of the Irish District Board of the National Gas Council. At the latter meeting, which was addressed by Mr. E. J. Fottrell, Mr. R. Healy, Secretary of the Cork Gas Consumers' Company, urged everybody connected with the gas industry to talk about it—to tell the public by both the spoken and the written word that as an economical and useful provider of light, heat, and power, as well as a very large employer of labour and payer of rates and taxes, the gas industry is absolutely essential to the economic life of the nation.

Mr. J. C. Walker, Secretary of the British Commercial Gas Association, explained broadly how the "B.C.G.A." can help in fulfilling this aim and thereby fostering the progress of gas. One of his main points, with which we are in entire agreement, is that no amount of national propaganda can be a substitute for local activity in the Press and in other ways; national effort can only be effective in so far as it is backed up by the progressive policy of individual undertakings. What the "B.C.G.A." can do—and given the opportunity they can do much—is necessarily dependent on the support they get from these undertakings; and the distressing fact remains that at the present time there are about fifty concerns in Ireland, with a total output of some 800 million c.ft. of gas per annum, who are not members of the Association. Mr. Walker stated that if these undertakings and those who are already members were contributing on the full basis to the funds of the national bodies the proportion of the total subscriptions which would come to the "B.C.G.A." would permit of regular publicity in the newspapers in Ireland. And there are so many excellent new gas appliances to advertise, such as the small-consumption storage water heater. In addition to all this advertising, there must be good salesmanship, in which regard there appears no reason why small undertakings should not co-operate. Further training facilities for gas salesmen are at hand. The "B.C.G.A." is formulating a scheme, which will be put before the members next October, for providing a sound correspondence course of education which will be available to every gas salesman irrespective of geographical domain. This is a matter which has been dealt with by the "JOURNAL" on several occasions, particularly of late; and it is gratifying to know that action has followed so speedily on suggestion.

## *Coal Prices and Gas Charges*

IN addition to the paper by Mr. Edmonds, to which we shall refer in a moment or two, there were two further contributions—one on "Gas Sales in Small Towns," by Mr. D. McIntyre, of Dungannon, and the other entitled "Experience in Carlow," by Mr. L. G. Young, of that town. These two papers, together with the discussion on them, will be published in next week's "JOURNAL." Turning now to the remarks of Mr. Fottrell, two things certainly deserve emphasis. One is the Coal Mines Act, 1930, which is likely to raise the price of gas coal as compared with coal for other purposes, and the provisions of which might have been still more disadvantageous to our industry had it not been for the efforts of the National Gas Council when the Bill was being considered. In view of what Mr. Fottrell had to say, it is fitting that we should publish in to-day's "JOURNAL" a synopsis of the Act, specially compiled for gas undertakings, together with observations on how the new provisions will affect our industry. Under the Act, coal contracts made for a period of twelve months or longer hold good whether or not the prices fixed in them are below the minimum ruling within the running of the contracts, providing at the date they were made they were at or above the minimum, and also that there is no clause in a contract which specifically determines otherwise. As the collieries by the Act are to operate collectively in determining prices, &c., gas undertakings will do well similarly to determine policy in anticipation of attempts to make contracts contingent upon or variable by a district minimum set subject to the contract being made. At the meeting of the Irish Association, more than one reference was made to the threat which Ireland suffered during the past year in connection with the scheme contemplated by the Irish Coal Importers' Association, formed for the purpose of securing a monopoly in the distribution of coal in Ireland. The effect of this scheme would have been exceedingly bad for the Irish gas industry; and the Irish Association of Gas Managers, assisted by the "N.G.C.," exposed the scheme and succeeded in suppressing this undesirable movement.

The other point in Mr. Fottrell's address to which we would refer concerns gas prices. Statutory companies both in England and in Ireland labour under a difficulty in regard to the establishment of equitable tariffs; but Mr. Fottrell expressed the hope that next spring the British Parliament will introduce a Bill which will put the gas industry upon an equality with electricity supply undertakings. He is satisfied that the Free State Government are prepared to introduce a similar measure, and that the Government of Northern Ireland are equally friendly disposed; therefore he claims that some progress has been made as far as statutory undertakings are concerned. But he pointed out that there exist in Ireland to-day many non-statutory concerns which are possessed of the power to introduce any tariffs which they believe are fair. We look forward to some pioneer work on the part of these undertakings, to secure from every consumer something like a reasonable return on the capital costs he imposes on the suppliers of gas, and to prepare the way for those other undertakings which are not yet in a position to act.

## *A Matter of Policy*

ELECTRICAL competition was the theme of the paper by Mr. Edmonds, Manager at Waterford; and, like Mr. Buckley, whose Presidential Address was reviewed in these columns a week ago, the author is determined that pursuance of the policy of allowing gas and appliances to sell themselves will spell disaster, but that reversal of this policy will bring success in face of all competition. In common with Mr. Buckley, he points to America and Canada as demonstrating that gas and electricity can progress together, and he cites Toronto as a particular illustration, where, with electricity at a half-penny a unit, only 2000 electric cookers are in use, compared with 150,000 gas cookers. Many of the figures of comparative costs of cooking by gas and electricity, which Mr. Edmonds includes in his paper, explain in part why the gas cooker is, and is likely to remain, in such high favour among the housewives of all countries. A considerable portion of his contribution is devoted to this subject; and he quotes the results of a practical test carried out a few years ago by Mr. H. H. Thomas, of the Liverpool Gas Company, on the relative costs of cooking a meal for six persons by gas and by electricity. This test showed that, with the charges for each commodity in vogue at the time (gas at 8d. per therm; electricity at ½d. per unit *plus* a rateable charge), electrical fuel costs are almost four times as great as gas; moreover, the rents of the electrical cookers and meters are nearly three times those of the corresponding gas appliances. This comparison

has recently been criticized adversely by the electricians. To this criticism, however, Mr. Arthur Forshaw replied in the "JOURNAL" for Aug. 13 last; and in view of Mr. Edmonds' paper, his reply has added interest.

There are, of course, many features other than that of price which deservedly render the gas cooker so popular, apart from the fact that electric hotplates lose their efficiency after considerable use—Mr. Thomas put this deterioration at 26 p.ct. after twelve months, though probably improvements in the elements have been effected since the time when those tests were made. In regard to these "other features," we may well remind our readers of the report which Mr. A. H. Barker presented at the Joint Gas Conference held in Birmingham this year. Throughout his trials on the comparative costs of fuels for domestic purposes, Mr. Barker had three very competent cooks, and the principal difficulty he experienced was in inducing these cooks to use electricity. Whenever a gas cooker was about, the cook was apt to transfer the heavy cooking work from electricity to gas; and it was only by cutting off the gas supply that Mr. Barker could arrive at his figures for the cost of electrical cooking. One of the chief drawbacks of the electric hotplate is its slowness; and all housewives appreciate the value of rapidity. And one of the chief drawbacks of the electric oven, as mentioned by Mr. Edmonds, is the heavy time lag. The other main drawback—and one which will prove more of a stumbling block in the future, as the public become better acquainted with the virtues of automatic gas cooking—is the difficulty of attaining flexible thermostatic control. The author also puts forward figures which afford some indication of the relative positions of gas and electricity in the field of water heating; but this indication is slight, and no mention is made of the various types of gas storage heaters now available.

## *Publicity, and Showrooms*

On the face of it, then, gas for cooking is in several ways—apart entirely from cost—superior to electricity; and the same applies to other applications, particularly heating and water heating. We in the industry know this; but, moving about constantly in spheres where this appreciation is common, we are apt to forget that what is stale news to us may never have been heard of by vast numbers of the public. Gas lighting controlled by switch, for example, is definitely a novelty to most of those who visit gas exhibitions to-day, though it is by no means new to those who are engaged in our industry. Mr. Edmonds makes it clear, just as Mr. Buckley does in his Address, that, in spite of what has been accomplished by enterprising concerns, several gas undertakings in Ireland are reluctant to incur the responsibility of a showroom or its equivalent. Surely the results which have already been gained are sufficient proof that a showroom of some sort or other is a desirable acquisition; and certainly time will show that it is an essential one. Mr. Buckley rightly regards with dismay the number of gas concerns in Ireland which are without showrooms; he confesses to shame about it. And Mr. Edmonds urges that some form of showroom activity is really a moral duty of every gas undertaking. How many managers having no showrooms, he observes, have experienced the stir and commotion which a small cooking demonstration has created when held in their districts, and how many have been told by customers the same story—"We had no idea there were such appliances." He puts forward the view that, while it may not be possible for every gas company in Ireland to own an attractive showroom staffed with well-trained attendants, some good could be achieved by co-operation with local tradesmen to the extent of hiring windows, or arranging for space for the exhibit of gas appliances in shops. Though this can never constitute a substitute for premises owned by the gas undertakings themselves, there is much to be said for it; but it ought to be backed up by the organizing of exhibitions periodically, when practical demonstrations may be staged to show the capabilities of modern gas appliances and the truth of what the gas undertakings claim for them. Finally, there is the matter of Press propaganda; and we would emphasize again that increased local publicity must accompany national effort; both are necessary to obtain the greater consumption which awaits our industry. A *laissez faire* policy is calculated to bring disaster, while, with all the advantages which gas possesses, the reverse is equally true.

## *Benzole from Continuous Verticals*

For several years now, Mr. W. A. Voss, of the Gas Light and Coke Company, has devoted much attention to the question of benzole recovery, and particularly to a study of how its composition may affect the economics of the process. Many of our readers will remember the results of an investigation, which were published three years ago, which he made of the benzole content of carburetted water gas, when he found that the spirit has a high boiling-point range, and that it contains a high proportion of unsaturated hydrocarbons which are particularly difficult to remove by acid washing. The conclusion was drawn that it would not be a paying proposition to treat carburetted water gas. On later pages of our issue to-day we commence an account by Mr. Voss of the results of work undertaken in the laboratories of the Gas Light and Coke Company to determine the quality and quantity of benzole made in continuously-operated vertical retorts working under normal conditions and representative of the make over a period of several weeks; and he describes in detail the apparatus and the methods of analysis employed. His contribution, following the findings of Hollings, Pexton, and Chaplin in regard to benzole recovery by the active charcoal process, and the discussion by the Institution of Gas Engineers at Leeds last June on the paper by Hoffert and Claxton, is opportune, and will be studied with the greatest interest. The last-named authors, it will be remembered, stated that the recovery of benzole from gas produced in vertical retorts is less attractive than from that produced in horizontals; but, although benzole recovered from vertical retorts without steaming may contain about 10 p.ct. by volume of paraffins and 10 to 15 p.ct. by volume of unsaturateds, the difference in the value of therms as benzole and the price at which therms are sold to large consumers by many gas-works using verticals is still sufficiently wide to indicate that benzole recovery would be profitable on these works. Even if the retorts are steamed and give a benzole with 20 p.ct. of paraffins and 25 p.ct. refining loss, it was stated, the net value of the benzole as therms in the gas apparently is still not less than 4d. per therm.

To summarize the *raison d'être* and the main findings of the present contribution, Mr. Voss points out that a knowledge of the composition of the benzole present in the gas obtained by vertical retort carbonization is of value for two reasons. First, in view of the increase in vertical retort practice which is taking place in this country, it is desirable to know the quality and quantity of the benzole available from this source, in order that its value for the purpose of augmenting or supplanting the benzole from normal sources may be viewed in its true perspective, and to determine what alterations, if any, would be entailed in the cost of extraction and purification and in plant operation, &c. Secondly, the information obtained may be instrumental in furthering the state of knowledge on what is taking place within the retort and of the coking process generally, by a comparison of the results obtained in this type of retort practice with those of other methods of carbonization. He emphasizes, however, that in normal high-temperature carbonization variations caused by such factors as differences in the temperature of carbonization, rate of throughput of coal, degree of steaming, &c., have much less effect on the quality of the benzole than has the type of carbonization employed.

The author mentions that in works practice it is not possible to extract the whole of the condensable spirit from the gas, and that the quality of the benzole recovered is affected by the quantity of active charcoal used for scrubbing a given volume of gas; the benzole recovered from plants required to deal with relatively large volumes of gas tends to be heavy, and the recovery of benzole per ton of coal carbonized is proportionately low. Hence, the benzole examined in the investigation represented a definite extraction expressed as gallons recovered per ton

of coal carbonized. The results from two types of continuous vertical settings were gained, and show that both types give benzole of a similar quality. The conclusions drawn from the work are as follows: "The benzole in the gas obtained from continuously-operated vertical retorts carbonizing Yorkshire coal is characterized by high unsaturated hydrocarbon and paraffin contents. The unsaturated compounds would probably complicate washing on a large scale, and the acid cost relative to the quantity of useful spirit obtained would be greater than is the case with benzole derived from horizontal retorts. The specific gravity of the benzole approximates to 0·845. This low gravity is due to the large quantity of paraffins, and would make compliance with the existing benzole specification difficult. There is no reason to suppose, however, that the spirit would be inferior as a motor fuel to benzole from horizontal retorts."

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**Hygienic Heating—**

We hear so much about the supposed merit of the electric fire in that it "does not use up the oxygen of the air" that we were glad to see in last Saturday's "Times" that Sir Leonard Hill puts the matter in its proper proportions. There is no advantage, he says, in the fact that an electric fire does not use up the oxygen in the air. The difference of temperature between the air inside an ordinary room and that outside sets up ventilation through crevices of doors and windows sufficient to prevent any reduction of oxygen or accumulation of carbonic acid to the amount which is of consequence to health. A fire fitted with a flue occasions an increase of ventilation by drawing in outside air, and so makes the conditions better. We need abundance of cool and gently moving air to prevent body-heat stagnation and keep the respiratory membrane in good condition, and to sweep out of the room house-dust particles and microbes floating in the air.

**And Ventilation by Gas.**

Though it cannot be averred that our industry has not paid attention to the important fact that a properly fitted gas fire not only heats, but also ventilates, the apartment in which it is installed, we do think that insufficient use has been made of this excellent selling point. Consequently we are glad to learn that during the coming autumn and winter months the British Commercial Gas Association will be inserting in the national and district newspapers a series of new and striking illustrated advertisements dealing with gas fires. This was mentioned by Mr. J. C. Walker, Secretary of the "B.C.G.A.," at the annual meeting of the Irish Association of Gas Managers. He stated that the "B.C.G.A." will stress, in addition to the well-known advantages of gaseous fuel for room heating, the importance of "the fire which ventilates as well as heats," with the object of countering the growing practice among some builders of constructing rooms without ventilating flues.

**The Unremunerative Consumer.**

The results of an analytical survey of the district covered by the gas undertaking supplying Ingoldstadt, writes A. Schäfer in "Das Gas- und Wasserfach" were a veritable revelation. An abstract translation of the article which appeared in our German contemporary was published in the "JOURNAL" last week. In the district in question there are 3406 domestic meters and 143 industrial meters; and the survey showed that no fewer than 703 dwellings took on an average only one farthing's worth of gas a day. Moreover, their consumption was mainly at peak-load periods, since the gas was used for cooking purposes. A two-part tariff was introduced to remedy an obviously unfair state of affairs.

**Another Example.**

A further investigation, this time in America, was described by Mr. S. L. Drumm, of the New Orleans Public Service, before the Southern Regional Gas Sales Conference held recently in Savannah. In an area serving 70,258 consumers it was determined that, to meet all costs, a monthly gas usage of 4054 c.ft. per consumer was necessary. Results of the survey showed, however, that 81·6 p.ct. of all the consumers burned less than the requisite quantity each month. In other words, 18·4 p.ct. of the consumers were not only paying their own costs, but were making up the losses occasioned by the vast majority. Further examination demonstrated that the group of 81·6 p.ct. of the consumers used only 43·4 p.ct. of the total gas sold. Such a condition, observes Mr. Drumm, is probably not far from that under which most gas undertakings in the United States operate. Though he agrees that in some cases the rate structure is a partial bar to the fullest development of sales possibilities, he believes there are few instances in America nowadays where existing rates will not permit a much more liberal use of gas by the domestic consumer than now prevails. Hence the need, through the operation of a well trained and adequately compensated sales staff, courteous service, and education of the consumer, to build up the load by the addition of such small-consumption appliances as the refrigerator and the storage water heater. Assume that practically every domestic gas consumer has installed a gas range which will use 14,000 c.ft. of gas per year. By adding a gas refrigerator it is possible to increase the consumption by approximately 1000 c.ft. per month, or 12,000 c.ft. per year; and by installing an automatic storage water heater it is possible then to increase this load approximately by 1000 to 2000 c.ft. per month, or from 12,000 to 24,000 c.ft. per year. And in addition to these two appliances, there are many others, such as the incinerator, and the clothes dryer, the use of which will raise a customer from the non-compensatory to the compensatory class.

**A Remunerative Consumer.**

Discussing remunerative and unremunerative consumers recalls the case of a really remunerative consumer which was reported in the "JOURNAL" seventy years ago. Here is the account, which appeared in the "JOURNAL" for Aug. 28, 1860: Recently a gentleman returned from Europe who had been absent from New York with his family for seven months. He paid his gas bill the day he left, and the house had not been opened for seven months; yet, when it was, the gas man took a return from the meter, and a bill was made out for 52 dollars for 20,800 c.ft. of gas. Mr. Grinnell went and complained to the secretary, related the circumstances, and threatened exposure of such a barefaced robbery. He refused to pay the bill. "Very well, sir," said the Secretary. Mr. Grinnell went home and told his wife. "Pay it," said she. "Why so?" he asked. "Because," she replied, "the day we left New York I had to go back to the house for some article I had forgotten. The window shutters were fastened; I lit the gas. The other day, when we returned, I found it still burning." The bill was paid, for a steady gas flame had been burning for seven months.

**The Unemployment Problem.**

In a pamphlet bearing the title "Unemployed or Reserve?" Mrs. Cloudesley Brereton outlines a scheme for remedying the present state of affairs caused by unemployment in this country—a scheme which, she maintains, could, by co-operation between Employers, Trade Unions, the Government, and Finance, be put into full working order in a couple of months. No community can afford to keep in idleness a fifth of its workers. "Unemployment," says Mrs. Brereton, should be a form of "paid-for leisure" of the best workers, and not "paid-for idleness" of the weakest; a reward in slack times for the best workers, and not a disaster in slack times for the poorest. She submits that under a reasonable national scheme agreed upon jointly by employers' organizations, Trade Union organizations, the Government, and Finance, it would be possible, instead of dismissing the weakest, to take out from productive work the corresponding percentage of the very best from each grade; and, subject to a grant equivalent to the "dole," *plus* some remission of taxation of profits, which together would cover cost of wages, to engage these picked men on various forms of re-education and re-creation until they could be re-absorbed into the normal stream of production. The result of the time so spent would, of course, be at the disposal of industry, and the workers would be under the direct control of their respective employers and trade unions, and subject to

workers' discipline just as if they were being employed on production.

**An Innovation in Gas Education.**

We learn that the principle of the travelling showroom has been extended to the education of would-be gas engineers at the Johns Hopkins University, Baltimore. The Department of Gas Engineering at the University now possess a "truck" equipped with sufficient seats for the entire senior class, and sufficient analytical apparatus to carry out tests on large-scale gas manufacturing plants. A group of students assemble at the University, board the "truck," and within a few minutes are at (say) the Spring Gardens Works of the Consolidated Gas, Electric Light, and Power Company, busily engaged on a test of a water gas plant. Several important concerns are co-operating in this mobile form of instruction, including bye-product plants, meter works, and industrial appliance laboratories. We therefore come to the conclusion that gas engineering students at the University of Baltimore are very well behaved, and do not drive in at the works gates in the way that some of their English confrères do. We hope, too, that a sedate chauffeur is employed to drive the "truck;" otherwise we can imagine that some of the apparatus, on arrival at the plant, may be found to have "sprung a leak." That this form of instruction is one only of many attractions at Johns Hopkins, however, may be gauged from the following statistics relating to the year 1929-30. The enrolment was made of thirty undergraduate and three graduate students; two new scholarships were established during the year, making a total of nineteen; and three Doctors' and seven Bachelors' degrees were awarded.

**The "Westchester Bus."**

A few years ago the Westchester Lighting Company, New York, built a bus which contains a gas range, an automatic refrigerator, and a number of other gas appliances for demonstration purposes; there is also room in the bus for about thirty children. The bus is towed to a location adjacent to a school building; and through the co-operation of the school authorities the Company have been able to give lecture-demonstrations in the bus to all the school children in the small towns which dot the Westchester County. Gas and water mains are connected to the bus, so that all facilities are available for these demonstrations. Describing the activities of the Home Service Department of the Company, of which the bus is one phase only, Mr. E. P. Prezzano, the Vice-President, stated recently in the "Gas Age-Record" that the school authorities regard the service very favourably, and gladly co-operate in the educational work.

**Home Service Departments.**

The Westchester Lighting Company is but one example of the many concerns in the United States which have organized Home Service Departments on an extensive scale. This development in America can be traced to the enterprise of the Consolidated Gas Company of New York, who, in order to popularize the use of gas for cooking, organized one of the first home service departments in the gas industry. That was more than twenty-five years ago; and the scheme was commenced by employing a corps of women inspectors to visit all installations of gas cookers, whether sold or on hire, and to instruct consumers how to use them economically and efficiently. Two of the most eminent cooking teachers in the country were engaged to teach the inspectors. The primary purpose of the home service movement was to render gas service more useful—to tell consumers about new equipment, and to create a desire for it. The movement was not generally appreciated, however, until about ten years ago, when, after the war, a marked change took place in the economic and social conditions affecting the use of gas in the home. Once the merits of the scheme had been recognized, the movement made rapid headway. According to a recent report of the Home Service Committee of the American Gas Association, in 1923, there were fourteen gas companies in the United States with Home Service Departments; two years later the number had increased to 74; to-day there are about 180 organized home service departments in the gas industry of America.

# PERSONAL

Mr. T. V. BLAKE has been appointed Assistant Gas Engineer at Blackpool. He has been Works Superintendent at the Bradford Road Station of the Manchester Corporation Gas Department since September, 1928.

# OBITUARY

The death took place on Aug. 18, at Birmingham, of Mr. W. L. RAMSDEN, at the age of 72. Mr. Ramsden was well known among the smaller gas undertakings in the South and West of England some thirty years ago. For many years he acted as General Manager for Messrs. Edward Cockey & Sons, Ltd., of Frome, Somerset. In 1911 he joined Messrs. Thos. Piggott & Co., Ltd., of Birmingham, retiring, owing to failing health, about five years ago.

The death occurred on Monday, Aug. 18, of Mr. EDWIN PAGE VINCE, of Minehead, in his 47th year. Mr. Vince, who at the time of his death was Engineer, Manager, and Secretary to the Minehead Gaslight and Coke Company, was a native of Swindon; his father, who survives him, being the Secretary of the Swindon United Gas Company. It was with that Company that deceased served his apprenticeship; and his first appointment was as Assistant Manager to the Merthyr Tydfil Gas Company. Before being appointed as Engineer, Manager, and Secretary to the Minehead Gaslight and Coke Company, Ltd., in July, 1915, he was for about five years Assistant Manager to the Taunton Gaslight and Coke Company. Mr. Vince's fifteen years with the Minehead Gas Company covered a period of exceptional difficulties and responsibilities, including as it did three-and-a-half years of the war, the coal deadlock in 1924, and the long coal lock-out and general strike in 1926. That through these difficulties the Minehead Company was able to maintain its service practically unimpaired was due largely to the foresight and able handling of such situations as they arose by Mr. Vince. During his service with the Company, too, Minehead developed extensively, and so rapidly over a certain period of years as to outstrip practically all public services. And in the successful efforts which the Gas Company made to keep pace with the growth of the town, the enterprise and business qualities of their Manager counted as a very material factor. Mr. Vince, who was a Freemason, did much public work for Minehead, and will be greatly missed by a wide circle of friends. He leaves a widow and three children.

# Forthcoming Engagements.

**Sept. 8-11.**—ASSOCIATION OF PUBLIC LIGHTING ENGINEERS.—Annual Meeting and Conference at Leicester.
**Sept. 9.**—FEDERATION OF GAS EMPLOYERS.—Meeting of the Central Committee.
**Sept. 9.**—NATIONAL GAS COUNCIL.—Meeting of the Central Executive Board.
**Sept. 9.**—INSTITUTION OF GAS ENGINEERS.—Meeting of Education Committee (4 p.m.), 28, Grosvenor Gardens, S.W. 1.
**Sept. 11.**—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual Meeting at Aberdeen.
**Sept. 17.**—INSTITUTION OF GAS ENGINEERS.—Meetings of Executive Committee (10 a.m.), Finance Committee (12 noon), and Corrosion of Pipes Sub-Committee (2 p.m.), 28, Grosvenor Gardens, S.W. 1.
**Sept. 18.**—WALES AND MONMOUTHSHIRE DISTRICT INSTITUTION OF GAS ENGINEERS AND MANAGERS.—General Meeting at Porthcawl.
**Sept. 18.**—SOCIETY OF BRITISH GAS INDUSTRIES.—Council Meeting in the afternoon.
**Sept. 18.**—SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS (EASTERN DISTRICT).—Meeting at the Incorporated Accountants' Hall, Victoria Embankment, W.C. 2, at 2.30 p.m.
**Sept. 23.**—INSTITUTION OF GAS ENGINEERS.—Meeting of Education Committee (4 p.m.), 28, Grosvenor Gardens, S.W. 1.
**Sept. 26-28.**—NATIONAL SMOKE ABATEMENT SOCIETY.—Annual Conference at Leicester.
**Oct. 10.**—MANCHESTER DISTRICT INSTITUTION OF GAS ENGINEERS.—Visit to the Partington Gas-Works.
**Oct. 15.**—EASTERN COUNTIES GAS MANAGERS' ASSOCIATION.—Autumn Meeting in London.
**Oct. 22-23.**—INSTITUTE OF FUEL.—Annual Conference at the Institution of Electrical Engineers, Victoria Embankment, W.C. 2. Annual dinner at the Connaught Rooms, Great Queen Street, W.C. 2, on Oct. 22.
**Oct. 27 to 29.**—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual Meeting at Hull and Bridlington.
**Nov. 19.**—SOCIETY OF BRITISH GAS INDUSTRIES.—Autumn General Meeting in London.
**Nov. 25-26.**—INSTITUTION OF GAS ENGINEERS.—Autumn Meeting at the Incorporated Accountants' Hall, Victoria Embankment, W.C. 2.

# THE NEWS OF THE WEEK

**Walton-on-Thames and Weybridge Gas Company** have declared dividends of 10 p.ct. on the "A" shares and 7 p.ct. on the "B" shares, less tax, in respect of the half-year ended June 30 last.

**The "N.B." Golf Circle** have heard with the keenest satisfaction that the Royal Aberdeen Golf Club have granted them the rare privilege of playing over the Balgowrie Links on Wednesday, Sept. 10.

**Peterborough Gas Company** have declared an interim dividend for the half-year ended June 30 of 5 p.ct. per annum on the new preference "A" shares, and of 7½ p.ct. per annum on the consolidated stock, less income-tax.

**The South Suburban Gas Company** have issued the following notice to their consumers relating to an increase in the price of gas, from 9d. to 9½d. a therm: The Directors regret to inform their consumers of an increase in the price of gas of ½d. a therm from and after the August meter readings. Consumers may rest assured that immediately economic conditions permit charges will be again reduced.

**The Largest Benzole Recovery Plant in the World,** operating with active carbon, is to be put down by the Gas Light and Coke Company at their Beckton Works. The contract has been placed with the British Carbo-Union, Ltd., of Bush House, Aldwych, W.C. 2. The plant will be capable of handling 75 million c.ft. of gas per twenty-four hours and will produce approximately 80 tons of benzole daily.

**A Petition,** signed by 216 tenants of the Shawlands Housing Estate, Glasgow, has been submitted to the Corporation Housing Committee, complaining that the electric radiators in the bedrooms of their houses are not efficient in keeping the houses free from damp. The tenants ask that coal or smokeless fuel grates be fitted in the bedrooms to replace the radiators; and the Housing Committee recommend that they be given permission to fit the grates desired at their own expense.

**Objections to Overhead Lines** for electricity supply have been put forward by the Birkenshaw Urban District Council, on learning that the Central Electricity Board proposes to carry overhead supply lines over the district in a service from Bradford to Thornhill. The Council hopes to develop the area as a good-class residential district, and does not consider overhead electricity lines would be a desirable feature. It is also understood that Birkenshaw is in an area scheduled as an open space.

**A Pigeon,** we have been informed, has nested in the roof of the new waterless gasholder at the Southall Station of the Gas Light and Coke Company. It selected a position near the base of the ventilating canopy and has duly reared its brood, and these are generally observed about the vessel. From this incident it is possible that the interior of a waterless gasholder may become as popular among our feathered tribe as the ornamental entablatures usually found on the summit of the cast-iron columns of the older type of gasholder.

**The Illingworth Carbonisation Company** announce that the plant, erected at Snowdown for Messrs. Pearson & Dorman Long, has been in operation since the end of May, giving a steady daily production of excellent hard smokeless fuel, together with the bye-products. The plant which has been installed at Allerton, near Leeds, for the T. & R. W. Bower (Illingworth) Carbonisation Company is now producing a specially clean, smokeless fuel, with a full range of bye-products. The output of these two plants is about 2000 tons per week.

**Residents' Objections** to the proposed new gasholder on land near the Carleton Road Housing Estate cannot be overcome by the Skipton Urban District Council. The Ministry of Health approved the scheme subject to the Council securing the consent of householders within 300 yards of the site. The majority of the householders and owners concerned have organized a stiff opposition, and an interview between them and the Chairman of the Gas Committee and the Gas Engineer has in no way modified the objections. The Chairman (Mr. W. Bellamy) told the Council last week that he regretted that the people of the locality had not been more public spirited in the matter, and that the Committee had certainly done their best to meet them.

## Blending with the Skyline.

Our photograph is of a new gasholder at Richmond, taken from Kew Road. In view of the unfavourable criticism of this sound engineering structure which has been published in the correspondence columns of the "Richmond and Twickenham Times," this illustration is particularly interesting, for it shows clearly that the holder is by no means unsightly, and

actually blends itself into the skyline. The photograph was taken by Mr. Freeman Burrows, who, writing in the "Richmond and Twickenham Times," mentions that a well-known Oxford Don recently expressed the opinion that a gasholder wisely painted may be as impressive as the cornricks on a Cotswold skyline. Mr. Burrows suggests that the sight of the sun setting on the new gasholder at Richmond enhances this simile.

## The South Yorkshire Gas Grid.

An important step has been taken by the Sheffield Gas Company in the proposed application for a Special Gas Order, the main objects of which are to provide for the definition of an area of supply, for the raising of the necessary capital, for the manner of keeping the accounts between the gas network controllers and their customers, and various other matters in connection with the general supply of coke oven gas in South Yorkshire.

There are nineteen coking plants in the area, from which an enormous quantity of coke oven gas could be produced annually. The Sheffield Gas Company is the biggest undertaking in the area, buying considerable quantities of coke oven gas. The estimated cost of linking-up the coking plants in the area is £537,000, and the Sheffield Company's legal notice of intention to apply for powers is the first move.

The first few clauses in the Draft Order provide for the extension of the Company's limits in a number of their existing gas areas, and for the inclusion in their area of supply of coke oven gas other districts not at the present moment within their area; these include the whole of the two County Boroughs of Rotherham and Barnsley, and a number of urban and rural districts. (If the Sheffield Gas Company obtain the powers for which they are making application, and if the Rotherham Corporation continue to use coke oven gas, it will mean that the Corporation will buy from the new gas network Company, instead of from the Rotherham Main Colliery and the South Yorkshire Chemical Works, as at present. The Corporation will, of course, maintain full control of their own distribution area, and will continue to retail gas.)

### Doncaster Not Included.

Doncaster, where the Corporation own the local gas undertaking, is not included in the proposal. The urban areas of Mexborough and Maltby are also left outside, but the gasworks from which they are served, at Swinton and at Hellaby, are included. This means that though Mexborough and Maltby will not be in the gas network, they will both be served from it. A similar arrangement will be in operation in other districts, specific mention of which is made in the Draft Order.

Further clauses in the Order authorize the Sheffield Company to exercise within the new limits all powers which they have in regard to their existing areas, to define the basic prices for

gas within different parts of the new limits, and to charge differential prices where necessary.

The clause dealing with the keeping of separate accounts makes provision as to the application of the revenue received from the coke oven gas business and to the sums to be paid or allowed to the Company's general undertaking as interest on moneys raised by the Company in respect of the management of the coke oven supply.

AGREEMENT WITH THE GRID COMPANY.

A further important clause authorizes the Sheffield Gas Company and the South Yorkshire Gas Grid Company, Ltd., to enter into agreements with respect to matters relating to the coke oven gas business and to confer powers in respect of those matters on the Grid Company. Provision is made with regard to the mutual protection of the Sheffield Company and other undertakers within the coke oven gas limits in connection with the laying of mains and executing other works by the Companies. The usual application is made to increase the Sheffield Company's borrowing powers and authorize loan capital, and to make new provision as to the issue of stock by the Company in connection with putting the contemplated scheme into execution.

Mr. Ralph Halkett, General Manager of the Company, has stated that what the Company are asking for is, briefly, an extension to a greater area, whereby the available coke oven gas can be brought into utilization by the local steel industries. By doing this they hope to be able to supply cheap gas to help the manufacturers to meet foreign competition, and also to aid employment. It is not the intention of the Sheffield Company, stated the Manager, to interfere in any way with other undertakings by supplying gas outside their limits of supply.

## Collin Ovens for Pont Brûlé.

The extensive interests of the Imperial Continental Gas Association, and the continual growth of the demand for coke and gas in Belgium, have necessitated the installation by their subsidiary Company, Les Cokeries du Brabant, of a large extension to their carbonizing plant at Pont Brûlé.

The technical experts of the Association recently thoroughly investigated the relative merits in design of the various coke oven systems, and also made an examination of many types of ovens in operation, and as a result the Association have instructed Messrs. Gas Chambers & Coke Ovens, Ltd., to instal at Pont Brûlé a Collin plant having a carbonizing capacity of 1200 tons of coal per day.

The plant comprises coal unloading, transporting, stocking, and conveying plant, coke handling, screening and loading plant, together with complete bye-product and benzole recovery and rectification plant.

The coal will be unloaded at the Company's wharf and conveyed by means of an india-rubber belt to a large stocking park running parallel with the coke oven battery. Thence it will be taken by an overhead grab crane, and delivered by means of an india-rubber belt conveyor to the crushing and blending plant, and thence to the coal service bunker of 1200 tons capacity. From the service bunker the coal will be fed into a charging larry which will be automatically weighed and then passed along the top of the battery for charging the individual ovens. The ovens will be of the Collin patent compound regenerative type, arranged in a single battery of 54, and the dimensions of each oven will be: 12 m. long between doors, 4·5 m. high, and 420 mm. wide (average). The coking time will be approximately 16½ hours and the minimum carbonizing capacity will be more than 24 tons of coal per oven per day. The coke will be used for metallurgical and domestic purposes.

Metal-to-metal self-sealing doors will be fitted, thus eliminating all clay luting, ensuring cleanliness, and reducing labour cost. In order to provide the utmost flexibility necessary in a gas manufacturing station, the ovens will be arranged for alternative heating by either producer gas or coke oven gas, and will be so equipped that the change over of any number of ovens from one gas to the other, or to a mixture of the two, can be made in a few moments without interfering with the working of the battery; thus the method of firing can be adjusted to suit the market for coke and gas from time to time. It is probable that for some months after completion, coke oven gas will be the heating agent, but the Company are contemplating the installation of mechanically operated gas producers, to meet the above conditions.

In the Collin patented system of heating, all the flues are flame-heated all the time, first upwards and then—on reversal—downwards, with the result that the fuel consumption per unit of coal throughput is considerably lower than with other types of ovens.

The coke will be discharged from the ovens on to a hot coke car by means of a substantially built pusher, and conveyed by an electric locomotive to a central quenching tower, and, after quenching, will be discharged on to a wharf, whence it will be taken by means of an india-rubber belt conveyor to the screening plant. The gas, on leaving the ovens, will be cooled down to about 120° C., by means of liquor sprays, on entering the hydraulic main, and will then be taken by way of a foul gas main to the primary coolers and bye-product plant.

The ammonia will be recovered by the indirect process, and the sulphate plant is designed for dealing with seven days' liquor in five working days. The benzole plant will be capable of recovering naphthalene and wash-oil free benzole, 100 p.ct of which will be volatile at 180° C. The plant will consist of the necessary stills, oil heaters, heat exchangers, coolers, naphthalene pans, and rectification plant, &c.

The whole plant will be arranged with a view to reducing labour costs to a minimum, and also to making it as far as possible independent of the human element, and the general equipment will be such as to reduce the power and the steam and water requirements to an absolute minimum.



## Chefs Enjoy Cookery Demonstration.

On Wednesday, Aug. 13, several chefs from the Harrogate Hotels witnessed a cookery demonstration in the New Lecture Room of the Harrogate Gas Company. A six-course dinner was prepared according to the recipes of London chefs, by Mrs. Margaret Trainor, M.C.A., and comprised the following: Tomato soup, halibut, braised sweetbread, two chickens, bread sauce, seakale, peas, and baked potatoes, Mayfair pudding, and cheese straws.

The whole of these were put into a "New World" cooker (W.D. 66), which was securely chained and padlocked at 3.15 p.m. by Mons. Zimmerman, Chef at the Southlands Hotel, who retained the key. The "Regulo" was set at Mark 7, and while the dinner was being cooked, a tour of inspection was made of the new workshops and showrooms, under the guidance of Mr. Frank H. Robinson, the Engineer and Manager, and Mr. Wadsworth, the Distribution Superintendent. Stoves and meters were shown under repair, the system of testing meters and appliances was described and demonstrated, and the system of keeping the stores was fully explained to the visitors.

At 4.30 p.m.—1¼ hours later—Mons. Zimmerman unfastened the padlock, removed the chain, and opened the oven. The dishes were removed for inspection and found to be perfectly cooked; they were carefully examined by the chefs, who expressed great admiration of the results.

On behalf of the visitors, Mons. Leder, Chef of the Queen Hotel, proposed a heary vote of thanks to the Harrogate Gas Company and to all those who had assisted, including Messrs. Warmby and Pounds (of Messrs. Wilsons & Mathiesons), and especially to the demonstrator, Mrs. Trainor. Mr. Robinson and Mrs. Trainor suitably responded.

## Company Results at June 30.

**Bridport.**

The Annual General Meeting of the shareholders of the Bridport Gas Company, Ltd., was held in the boardroom on Aug. 12, Mr. W. G. Ralls, Chairman of Directors, presiding. In submitting the audited statement of accounts for the year ended June 30, the Directors stated that the sales of gas were again well maintained, being over 52 million c.ft. The sum of £250 had been placed to the general reserve fund and a similar amount to income-tax reserve fund. Dividends at the rate of 5 p.ct. on the "A" preference, 6¼ p.ct. on the "B" cumulative preference, and 10 p.ct. on the ordinary shares, *less* tax, were recommended, carrying forward a balance of £552.

**Shrewsbury.**

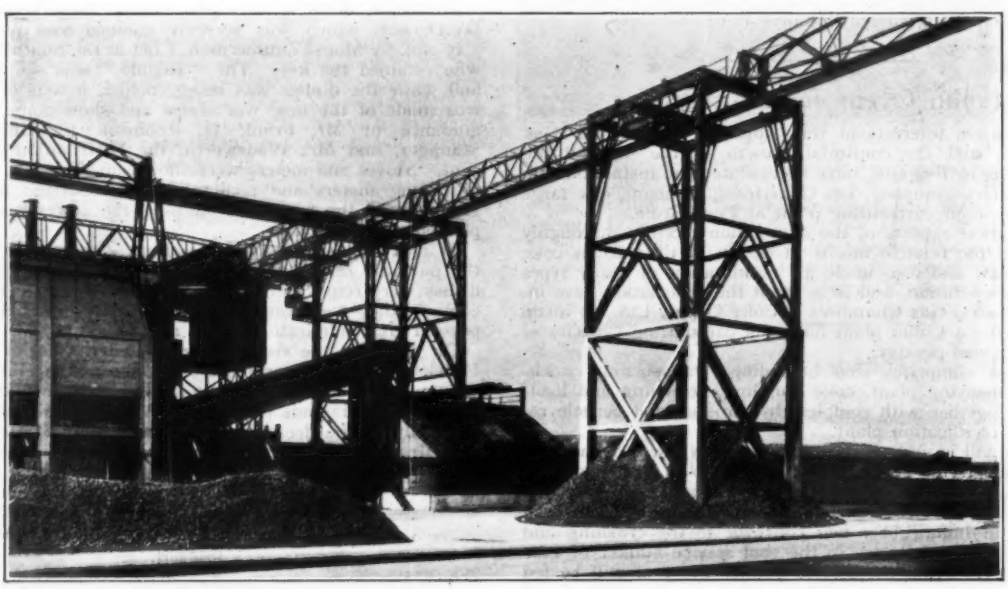
The Directors of the Shrewsbury Gas Light Company present to the proprietors a statement of accounts for the year ended June 30, 1930, showing a gross profit on the revenue account amounting to £9055. After allowing for the interim dividend of 2½ p.ct. (*less* tax) paid in March last, and the interest on mortgages for the year, the balance of net profit available amounts to £12,809. The Directors recommend that a final dividend of 4¼ p.ct. (*less* tax), making 6¾ p.ct. (*less* tax) for the year, be declared. The reserve fund now stands at £13,620, and the special purposes fund amounts to £11,056. There has been an increase of over 4 million c.ft. in the sale of gas during the year, but a slump in the tar products market is the cause of a further fall in receipts from residuals. Convenient premises, practically adjoining the gasworks, have been purchased, with a view to providing much needed accommodation for the distribution department. The number of cookers on hire at June 30 was 5177, together with 2152 fires. There were also 3433 ordinary and 5963 prepayment meters in use.

# HANDLING COKE EFFICIENTLY - - -

*Thirty years after the formal opening of the Greenbank Gas-Works at Blackburn, new coke-handling plant was inaugurated on Thursday last.*

The ceremony, which was attended by a large party of councillors and aldermen, took place during the afternoon of Aug. 21, when the new telpher plant installed by Messrs. West's Gas Improvement Company, of Manchester, was opened by Councillor Houghton Johnson, Chairman of the Blackburn Gas Committee.

As now arranged, the coke is discharged into skips below the retorts, and these skips are picked up by an electrically-driven telpher machine having a gross lifting capacity of 3½ tons, capable of hoisting the full load at a speed of 88 ft. per minute, and travelling with a full load at 750 ft. per minute. The runway track is about 1117 ft. long at a height of 65 ft. 6 in. above the yard level. A portion of the coke is discharged into overhead steel hoppers attached to the retort house, from which a supply is conveyed to the producers in suspended skips travelling on ball bearing carriages on an overhead runway.



THE NEW TELPHER PLANT AT THE GREENBANK WORKS OF THE BLACKBURN GAS DEPARTMENT SHOWING THE CAGE IN OPERATION.

The coke for sale is discharged by the telpher machine into a steel receiving hopper immediately over the screening plant, or into a battery of hoppers constructed in reinforced concrete. These hoppers have a capacity of 500 tons, and are divided into seventeen self-clearing compartments arranged with openings in the bottom for delivering the coke on to a rubber band conveyor, which carries it to the screening plant, where it is graded and stored in a set of bunkers having a capacity of 100 tons. Surplus coke is conveyed by the telpher and discharged into the store yard. The telpher also conveys the breeze from the screening plant to the bunkers over the boiler house, as well as conveying coke direct to the overhead bunkers supplying the water gas plant. The screening plant is of the "Whitehall" type.

Councillor JOHNSON, before starting the new telpher plant, mentioned that the growth of the Department had been such as to necessitate the remodelling of the Greenbank Gas-Works. In laying out these works, the Engineer had designed them in such a way as to provide a minimum amount of fuel handling. The new telpher installation formed a very complete unit. The contractors, Messrs. West, had carried out their work in a very satisfactory manner, and at all times had been only too anxious to meet the wishes of their Engineer on any point.

At the close of the ceremony, Mr. R. GLOVER, of the contracting firm, who attended in the absence of Alderman F. West, C.B.E., and Mr. E. West, expressed the hope that the plant would serve the same useful purpose, and give the same satisfaction, as had previous machinery installed by them. It was the desire of his firm to be of service to the industry, for they recognized that it was only by efficient service that British trade could be maintained. As this was the first occasion of its kind during the Chairmanship of Councillor Johnson, he had pleasure in handing him a silver cigarette case from the Directors of the firm as a memento of the occasion.

Tea was served in the social hall, following which there were a number of speeches.

Councillor JOHNSON described the gas undertaking as a fine example of municipal enterprise, and said the chief reason for this was the fact that they had an Engineer of efficiency and calibre in Mr. Mitchell. No small measure of the success achieved was due to his foresight and management. He had a capable and willing staff ready to co-operate to further the interests of the Department. If they wanted evidence of the success, he would mention that the Department had made during the last ten years an advance equal to that of the previous forty years, despite the increased competition of electricity and the depressed state of their staple industries. One feature of the works with which he was particularly impressed was the comradeship which existed everywhere.

Councillor W. HAMMOND, J.P., voiced appreciation of the work of Mr. Mitchell and his staff as one of the original deputation which visited Scotland to obtain information regarding Mr. Mitchell's work there prior to his appointment at Blackburn. He thought their recommendation had been completely justified in every sense of the term; and he hoped they would retain Mr. Mitchell's services for a long time to come.

Councillor C. EASTWOOD moved a vote of thanks to the Chairman of the Department and to the Engineer for the facilities provided. He said the new telpher system would save money and labour, and would add to the efficiency of the Department.

Councillor CROSS, J.P., seconded; and was supported by Councillor J. HOLDEN.

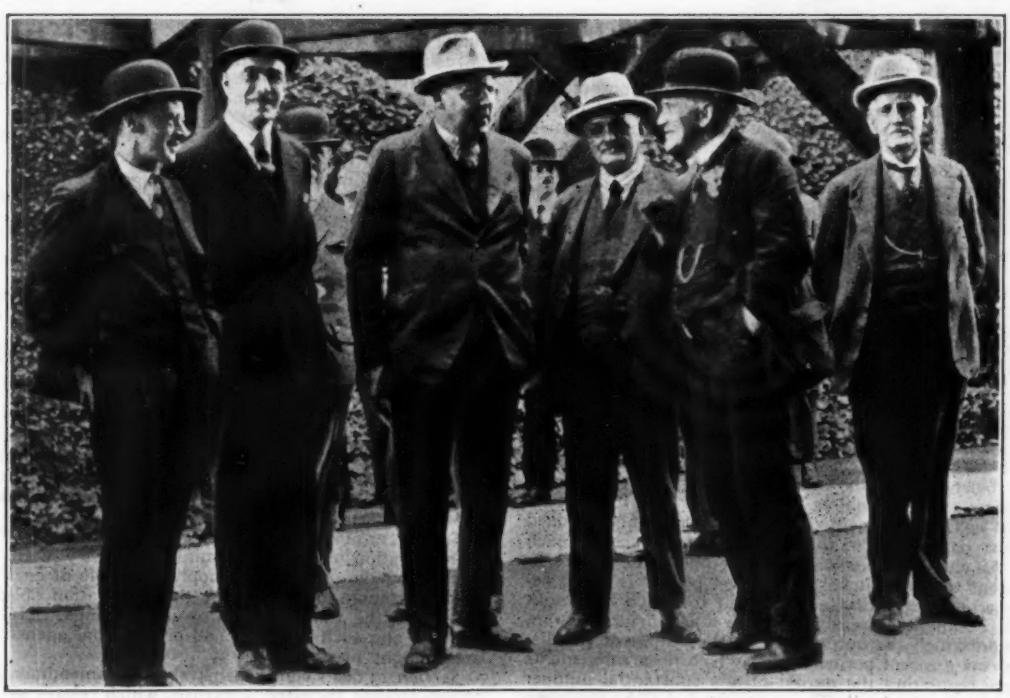
Alderman A. TOWNSEND, Councillor C. A. CRITCHLEY, J.P., a

**COUNCILLOR HOUGHTON JOHNSON, CHAIRMAN OF THE BLACKBURN GAS COMMITTEE, STARTING THE NEW PLANT.**

On the left of the picture (reading right to left) are the Mayor (Alderman L. Bates, J.P.), the Town Clerk (Sir Lewis Beard), Councillor J. Holden (Vice-Chairman of the Gas Committee), Mr. G. P. Mitchell (Gas Engineer), and Mr. R. Glover (representing Messrs. West's Gas Improvement Company, Ltd., the Contractors).

former Vice-Chairman of the Gas Department, Councillor R. Culshaw, and Alderman Porter also spoke in appreciation of the efficiency of the works.

Mr. G. P. Mitchell, the Engineer, said when he was appointed to Blackburn ten years ago they were faced with stiff problems. By easy instalments they had endeavoured to accomplish what they set out to do, and the works were now practically the finished article. From the point of view of efficiency—and he made the statement generally, and not in a personal sense—he doubted if there was another undertaking in the country which could compare with Blackburn, all things considered. This success was not due entirely to his efforts. A chief was not much good without able lieutenants, and he was thankful to say that he had had a good and efficient staff. Everyone pulled his weight, and was out for the good of the Department as a whole. At the start they were somewhat handicapped by the undertaking being so much over-capitalized. They had borrowed £300,000 for improvements, &c., and to-day the capital outstanding was only £7000 in excess of what it was ten years ago—viz., £607,000 to-day, compared with £600,000 in 1920. Between those two dates they had had two disputes. In 1921 they had one which cost the Department £72,000 and another in 1927, which cost £30,000—or a total of £102,000. Nevertheless, they did not call on the ratepayers for one single penny towards that high cost; and immediately after the 1927 dispute they reduced the price of gas by 3d. per 1000 c.ft. The visit that afternoon would give them an insight into the commercial side of the undertaking. They had a capital staff and fine showrooms; and the sales of apparatus were well maintained. Annually, the total amount was £20,000. The Department had spent a quarter of a million pounds on mains and services, and had only borrowed the modest sum of £10,000. The rest had been paid out of revenue as they had gone along. Despite the competition of the Electricity Department, the operation of daylight saving, and the continued depression in trade, he was pleased to say that they had increased the output by 400 million c.ft. during the last ten years. He hoped the next ten years would record similar progress. If they did not, it would certainly not be through want of effort to provide the people with a cheap and efficient supply of gas. [Applause.]



**MR. G. P. MITCHELL DISCUSSING THE NEW PLANT WITH COUNCILLOR C. A. CRITCHLEY, J.P. (A FORMER VICE-CHAIRMAN OF THE GAS COMMITTEE).**

# THE COAL MINES - - ACT, 1930 - -

*A Synopsis of the Act, specially compiled for gas undertakings, together with observations on how the new provisions will affect our industry.*

For more than a year the Government has been in the toils of controversy in and out of Parliament in connection with a promise given at the 1929 General Election that, if returned to power, mining hours would be reduced by statute. The Miners' Federation expected, when the Labour Party were entrusted with the Government, that a statutory seven-hour day would emerge. They reckoned without the effect of the Government's being in office, yet not in power. The new Act gives a 7½-hour day, but with an alternative of a 90-hour fortnight, subject to certain agreements and consents. Even the "half loaf" has only been secured by linking-up with hours sundry other provisions, mainly with the object of placating the Central Collieries Association and the Liberal Party, support from which quarters was absolutely necessary to get an Act of any kind relating to the mining industry through Parliament.

THE ACT SUMMARIZED.

Parliamentary and other transactions in connection with the Bill since its introduction have been so protracted, that it may be as well to summarize the provisions of the Act in its final form.

There are five parts, made of nineteen sections, viz.:

Part I.—Production, Supply, and Sale of Coal (10 Sections).
Part II.—Reorganization of Coal Mining Industry (3 Sections).
Part III.—Hours of Work (1 Section).
Part IV.—Coal Mines National Industrial Board (1 Section).
Part V.—General (4 Sections).

**Part I.**

*Section* 1 deals with regulation of the production, supply, and sale of coal by means of a central scheme operated by a Central Council, and district schemes operated by Executive Boards. The Board of Trade may approve or modify schemes voluntarily submitted by a majority (on output basis) of coal owners within six weeks of the passing of the Act—*i.e.*, before Sept. 13. If no scheme is submitted, the Board of Trade *shall* make a scheme for those districts failing to do so, and all schemes have to be in force within three months of the passing of the Act—*i.e.*, before Nov. 1 next.

*Section* 2 provides for the central scheme and its operating Council, which is to be composed of representatives of all the owners of coal mines in the several districts. The Central Council *shall* allocate to each district a maximum output, for such a period as the Council think fit, but amendment of the allocation during that period may be made if an Executive (district) Board shows "it is necessary to meet an increased demand for coal or any class of coal." The Central Council will act as a co-ordinating authority between the several districts, have power to make levies to cover its own expenses, and to demand returns, accounts, or other information from the districts. In case of dispute between the Executive Boards, or between them and the Central Council, arbitration is provided. The Central Council may inflict penalties on Executive Boards or on any other persons who contravene or fail to comply with the central scheme.

*Section* 3 provides for district schemes and their Executive Boards (which have to be appointed by all the owners of the coal mines in each particular district). If the scheme is not a voluntary one, the Board of Trade may nominate the executive, after consultation with the District Owners' Association, or, if no such body, with the Central Council. The Executive Boards will determine the class to which any coal produced in the district belongs, and the standard tonnage of every mine in the district; also (if coal is classified) for the tonnage of any class of coal. The method employed for fixing standard tonnage must pay regard to the special circumstances of each coal mine, "including the efficiency and economy of the working, the extent to which it has been developed or is being developed for economic working, the extent to which its output has been increasing or decreasing, and, in a first determination, the proportion which the output bore to the output of the district during some recent period during which no arrangements were in force regulating the output of any substantial number of the mines in the district." The quota fixed shall be the same for all mines in the district. The Executive Board will fix a minimum price for every class of coal produced, has power to impose and collect levies for its own expenses, and to require returns and other information from owners. In cases of dispute arbitration is provided for. Penalties may be imposed for failure to comply with the scheme. Two or more mines owned by one undertaking may be regarded as one mine for the purposes of a district scheme. Any mine exceeding its quota may incur a deduction from a subsequent quota, without any prejudice to the penalty already incurred.

*Section* 4 provides that contracts made before or after the passing of the Act shall not, unless the terms of the contract otherwise provide, be void or unenforceable by reason that they cannot be performed without contravening the provisions of a scheme in force under the Act. Owners are exempted from penalties or quota deductions for excesses in production caused by contracts entered into before Dec. 11, 1929, if it is proved that the excess was necessary to fulfil such contracts. Similar exemption is provided for any coal sold under a contract which is below a prevailing minimum, unless that coal was sold or contracted for at a lower price than the minimum which was in vogue when the contract was made.

*Section* 5 provides for a National Committee of Investigation, consisting of nine members, and a similar Committee for each district, consisting of five members. These Committees shall investigate such complaints as arise, other than those for which arbitration is specifically provided. Every Committee of Investigation will be appointed by the Board of Trade, which will also issue instructions on procedure. On the National Committee coal consumers will be represented by four members, owners by two, and workers by two; on the District Committee the numbers will be two, one, and one, respectively in each case, with an independent Chairman. If any Committee of Investigation finds that any provision in a scheme ought to be amended on the ground of being unfair or inequitable, report must be made to the Board of Trade, and if the Board agrees with the Committee, recommendations for rectification will be made to the Central Council or the Executive Board concerned. The Board of Trade may hold inquiries for the purpose of assisting in the consideration of any report. Investigation Committees may refer a matter, not disposed of as above, to a single independent arbitration. If a Committee neglects to investigate a complaint, any person aggrieved may, with the leave of the Railway and Canal Commission, appeal to that Commission, who shall have power to make such Order as they think fit.

*Section* 6 provides for the supply of returns, accounts, and other information to the Board of Trade by the Central Council as regards the central scheme, and by Executive Boards as regards district schemes.

*Section* 7 provides that the Board of Trade shall make to Parliament a report upon the operation of all schemes in the year 1931 and each subsequent year.

*Section* 8 provides that information obtained under the Act shall not be disclosed, under penalty for misdemeanour.

*Section* 9 stipulates the penalties which may be imposed for "contravention or failure," and those in administrative positions upon whom such penalties may be levied.

*Section* 10 provides that the Act shall end at Dec. 31, 1932, unless Parliament otherwise determines, and, in the event of the Act expiring, that various matters—rights, privileges, exemptions, obligations, liabilities, penalties, &c.—shall be unaffected by its termination.

**Part II.—Reorganization.**

*Section* 11 provides for a Coal Mines Reorganization Commission to consist of five Commissioners appointed by the Board of Trade, and makes safeguards for their impartiality, the conduct of business, and the costs of the Commission's functioning.

*Section* 12 makes it the duty of the Commission "to further reorganization of the coal mining industry with a view to facilitating the production, supply, and sale of coal by owners, and to promote and assist, by the preparation of schemes and otherwise, the amalgamation of undertakings." Inquiries may be held, and such technical and professional agents engaged as are thought necessary.

*Section* 13 deals comprehensively with amendments to Part I. of the Mining Industry Act, 1926, which relates to amalgamation of coal mines. In view of amalgamations which are increasingly in evidence in the gas industry, there is one provision which may be quoted in detail as being of interest in

that connection, viz: "The value of the undertaking of every constituent or absorbed company shall be assessed upon the basis of what would have been the value thereof as between a willing buyer and a willing seller if this Act had not been passed, and no such scheme shall be submitted to the Board of Trade unless the Commission have certified that such values have been so assessed.

**Part III.—Hours of Work.**

*Section* 14 provides that "during the continuance of the Coal Mines Act, 1926, Section 3 of the Coal Mines Regulation Act, 1908, shall have effect as if for the words 'one hour' there were therein substituted the words 'half an hour.'" This makes statutory the 7½ hours' day below ground. The proviso of a spread-over so resolutely insisted upon by the House of Lords follows. As it has already involved much heart-burning, and will doubtless be a bone of acute controversy in days to come, it is here given *in extenso*.

> Provided that, if an application, by agreement between representative organizations of the owners of and the workers employed in or about the coal mines in any district, is made to the Board of Trade in that behalf with the approval of the Mining Association of Great Britain and the Miners' Federation of Great Britain, the Board of Trade shall make an order, which shall become effective forthwith, that the substitution of the words "half an hour" for the words "one hour" in Section 3 of the Coal Mines Regulation Act, 1908, shall not apply as respects any mine in such district at which the daily hours below ground on an average taken over the twelve week days in any fortnight do not exceed the daily hours permissible under Section 1 of the Coal Mines Regulation Act, 1908, as amended by the Coal Mines Act, 1919, by more than the extension of half an hour made under Section 3 of the Coal Mines Regulation Act, 1908, as amended by the Coal Mines Act, 1926, and by this section.

Reduced to simple terms, this means that, subject to the agreements and consents cited, mines may work in each fortnight 90 hours, instead of being tied down to a maximum day of 7½ hours. Part III. comes into effect on Dec. 1 next.

**Parts IV. and V.**

These parts, relating to a Coal Mines National Industrial Board and to general matters, are mainly domestic to the mining industry. Section 18 (Part V.), however, is of some significance to the gas industry, as dealing with interpretation, and particularly the definition put upon class of coal which reads:

"Class, in relation to coal, means a class determined according to the nature of the coal or of the trade, industry, or other category of consumer supplied, or according to whether it be supplied for use in Great Britain or for export to any other country."

**GENERAL OBSERVATIONS ON THE ACT.**

It is certain that the administration of the Act will add something to coal costs for operating expenses. Levies are to be made for the Central Council, and, as at present constituted, for 21 districts. The Reorganization Commission may easily be a costly business, but, if its duties are well carried out, it may possibly prove a factor in promoting future economy in coal mining. The points which chiefly affect the gas industry are the provisions of Part I., for the fixing of standard tonnage with its corollary of quota, and the fixing of a minimum price. These will call for both individual and collective watchfulness.

One of the most sinister features lies in the definition put upon "class of coal," which, there is little doubt, visualizes the fixing of minimum prices by reference to the "trade, industry, or other category of consumer employed," rather than by the nature of the coal supplied. However, there is extensive machinery provided for investigation of complaints, including, as a final resort, an appeal to the Railway and Canal Commission. Much depends upon the spirit in which the owners exercise the powers conferred upon them.

There is no mention in the Act of levies on production for the purpose of subsidizing coal sold for export. But from the terms of the Act it seems by no means certain that something of the sort will not be attempted under the district schemes as submitted for approval by the Board of Trade. The Central Council has power to create a central fund, and District Executive Boards district funds; and there is no interpretation of "Expenses," which are met by these funds, whether of those incurrable by the Central Council or the District Executive Boards. It would seem, therefore, that as these schemes are prepared and made available for inspection they must be scanned to see whether they completely harmonize with the text, as also the intentions, of the Act. It will be recalled that the House of Commons struck out a proposed central levy, and the House of Lords the district levies.

PROVISIONS AS TO CONTRACTS.

The relationship of Section 4 to gas coal contracts, which are usually made for a period of twelve months, and sometimes longer, will be noted. Such contracts hold good whether or not the prices fixed in them are below the minimum ruling within the running of the contracts, providing at the date they were made they were at or above the minimum, and also that there is no clause in a contract which specifically determines otherwise. As the collieries by the Act are to operate collectively in determining prices, &c., gas undertakings will do well similarly to determine policy in anticipation of attempts to make contracts contingent upon or variable by a district minimum set subsequently to a contract being made.

Sight must be kept of the fact that it is possible, without violating anything named in the Act, for coalowners to restrict freedom of choice in selection of gas coals. For the first time there is machinery which provides an "official table" round which owners may discuss coal prices and policy as relating not only to one district, but to all districts, and to the relationship between districts. There is now not a little jealousy existing between districts which need not be particularized here; it will be the aim of those who wish to make success of the Act to eliminate the causes which lead to inter-district dissatisfaction, among which is the sending forward of supplies from one district to another.

It cannot be gainsaid that in the matter of exportation the British mining industry badly needs co-ordination. If owners in other countries competing for export can act with a single voice, Britain ought to be able to do the same. Providing that laudable aim is reached without trespassing upon the rights and liberties of home consumers, few will quarrel with the aspiration.

Gas coal users may be advised to keep a careful written diary as to their experiences in the matter of pricing, making contracts, deliveries, &c., when such adversely affect their interests, so that information may be promptly available which will support any central representation or complaint on the subject. Dates and confirmatory evidence will form a useful adjunct to the record here suggested.

Although by Section 10, unless Parliament otherwise determines, the Act ceases to have effect at Dec. 31, 1932, there are reasons, national and international, why an earnest effort should be made, during the period of rather more than two years provided for "experimentation," to render the Act the basis of an amending Act which will remove any feature found to be objectionable. To that end owners, miners, and consumers may well give attention to "obligations" as well as to "rights," not confining either to their strict legal interpretation. There can never be lasting prosperity to British trade so long as our basic industry is the perpetual cockpit of political and industrial strife.

## From the "JOURNAL" in the Early 'Fifties.

*An Opportunist.*

The Town Council of Salford have agreed to accept an offer of an annual sum made to them by a speculator, in consideration of his being allowed to suspend tradesmen's addresses from the lamp posts.

*An Early Australian Test.*

Late advices from Melbourne announce the proposed formation of a company for the lighting with gas of this city, which now contains upwards of 40,000 inhabitants. Mr. Smith, of the house of Messrs. Rathbone Brothers & Co., of Birmingham, has taken an active part in the preliminary arrangements.

*A Project for a "Small Bathing Town."*

The works erected by the Vegetable Gas Company for the lighting of Blackpool, a small bathing town on the Lancashire Coast, and of Eton College, have suspended their operations. The Local Board of Health of the former place have advertised for tenders for the erection of cannel coal gas-works upon plans prepared by Mr. Rofe, of Preston, while the college authorities of Eton, with the co-operation of the townspeople generally, are converting their works to cannel coal under the able direction of Mr. Alexander Wright, the Engineer of the Western Gas Company.

*The Eternal City.*

The aspect of the site of the Circus Maximus is undergoing a rapid transformation, and the new gas-works are fast approaching completion. Not only is the "Eternal City" to "flare up" under the inspiration of coal gas, but by an especial clause in the contract, the Vatican is to be lighted contemporaneously with the first jet which illuminates the city. "Call ye that nothing," when the successors of Galileo's persecutors are actually about to irradiate their optical darkness with the light of practical science? May we not soon hope to see "high farming" also introduced into the Pontine swamp, brought into happy rivalry with the East Lothians or the Tiptree model? And why not? Two thousand years ago it was the most promising of the three.

# THE "JOURNAL" TECHNICAL RECORD

*Which also contains Full Reports of Meetings of Gas and Allied Associations* ———

## Irish Association of Gas Managers

### Thirty-Eighth Annual General Meeting

For the second year in succession, members of the Association assembled in Jury's Hotel, Dublin, when Mr. W. J. BUCKLEY, of Tralee, presided, on Tuesday, Aug. 19, over the thirty-eighth annual general meeting. The programme was a full one, and various subjects of topical interest were discussed.

PRESIDENTIAL ADDRESS.

As soon as the meeting had been called to order, the PRESIDENT delivered his address, which was reproduced in last week's issue of the "JOURNAL."

Mr. G. WALMSLEY (Londonderry), proposing a hearty vote of thanks to the President for his address, said he had ably summarized the position as it existed to-day, particularly with regard to the competition by which the gas industry was faced. He had given them many hints as to the manner in which this competition should be met. Mr. Buckley was certainly optimistic, and this was the line which they should all take. They should be optimistic, but without decrying their competitors. The thing to do was to go ahead and meet this competition in a fair spirit. The facts the President had laid before them should prove that they had nothing to fear. With the aid of their powerful national organizations, they were in a splendid position to meet any competition, even if it was, as they might think, unfair competition. They should display the same spirit of optimism as undoubtedly animated their opponents. [Applause.]

Mr. L. G. YOUNG (Carlow) seconded the vote, and the PRESIDENT briefly returned thanks.

COMMITTEE'S REPORT AND ACCOUNTS.

The HON. SECRETARY AND TREASURER (Mr. George Airth, of Dundalk) then read the following report of the Committee:

Your Committee have pleasure in recording that the meeting in Dublin last year was a great success, numerically and otherwise. The President's Address and Mr. W. H. Ainsworth's paper were much appreciated, the latter causing a good discussion.

The number of ballot papers sent in this year is again very small, and the Committee would like to see a more active interest in nominations for office.

The year has been a very trying one, as we have had to contend with an attempt to raise the price of coal to all customers in Ireland. This was contemplated by an Association known as the Irish Coal Importers' Association, which had been formed for the purpose of securing a monopoly in the distribution of coal in Ireland. The effect of this scheme would have been that the coal merchants subscribing to it would have had a monopoly in the sale of coal to gasworks in Ireland, with the exception of four towns. Your Committee believe that the publicity given by the Press to our protest in Dublin was successful in suppressing this movement.

Some time ago, Mr. T. J. Reid, of Ballina, brought before all members of the Association the necessity of starting a Gas Publicity Scheme, and your Secretary was requested to call a meeting in Dublin to get a consensus of opinion on the matter. All the members present, (37) were agreed that such a scheme was necessary, but the support promised was so meagre that it could not be undertaken.

Mr. Walker, of the British Commercial Gas Association, will be present at the meeting of the National Gas Council this afternoon, when we hope to hear that the "B.C.G.A." are prepared to assist us in formulating a scheme.

The balance to credit in the Treasurer's hands this year is £61 16s. 2d., as compared with £56 11s. 9d. in 1929.

The AUDITOR (Mr. L. P. Phillips, of Dublin) next presented the accounts, which, he pointed out, showed a balance in hand of about £5 more than a year ago.

On the motion of Mr. J. O. HALLIWELL (Mullingar), seconded by Mr. A. KIRKHAM (Enniscorthy), the report and accounts were unanimously adopted.

OFFICERS FOR 1930-31.

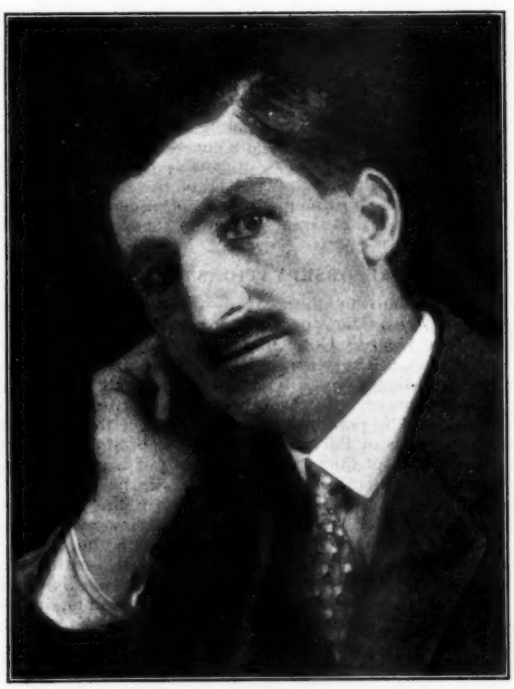
The Scrutineers who were appointed to go through the ballot papers (Messrs. J. Oxley, London, and P. Comerford, Dublin) subsequently reported the election of the following officers for the ensuing twelve months:

*President.*—Mr. G. Walmsley, Londonderry.
*Vice-President.*—Mr. L. G. Young, Carlow.
*Members of Committee.*—Messrs. J. H. Bell, Portrush; Mr. P. J. O'Callaghan, Omagh; A. Law, Limerick.
*Auditor.*—Mr. L. P. Phillips, Dublin.
*Hon. Secretary and Treasurer.*—Mr. G. Airth, Dundalk.

Mr. WALMSLEY thanked the members for the honour done him and his Company in electing him President for the coming year. On the assumption that the Vice-President of the Association would be elected to preside, his Chairman had asked him to give the members a cordial invitation to hold next year's meeting at Derry. It would mean a long journey for some, but if they came the Company would try to give them an enjoyable time.

PRESIDENT'S MEDAL.

Mr. L. W. DALBY (Wicklow) presented to the President the Association's medal, as a memento of his services, and expressed the hope that it would remind him of a pleasant year of office.



**THE PRESIDENT,**

Mr. W. J. Buckley, Tralee.

Following in the footsteps of his father, who was connected with the Cork Gas Company for over 50 years, Mr. Buckley received his early training at Cork under the late Mr. T. Travers. After serving the Company for 22 years, during the last 12 of which he acted as Assistant Engineer and Manager, Mr. Buckley was appointed in 1919 to take charge of the Tralee Urban District Council Gas Undertaking as Engineer and Manager, the position he now holds.

The PRESIDENT, in acknowledgment, said he trusted he might prove worthy to wear the medal.

REPRESENTATIVE ON THE INSTITUTION COUNCIL.

Mr. DALBY said that during the past two years he had had the honour to represent the Association on the Council of the Institution of Gas Engineers. He had attended a number of meetings, and was most cordially received. There were no ques-

MEMBERS OF THE IRISH ASSOCIATION OF GAS MANAGERS AT THE ANNUAL MEETING IN DUBLIN ON AUG. 19.

tions of particular concern to Irish gas affairs, but many interesting subjects had been dealt with of benefit to the industry in general. The outstanding event of his period of office had been the granting of the Royal Charter to the Institution. This Charter had been obtained only after a great amount of work by the promoters, and the thanks of the profession were due to those who had done so much to secure the final result. They in Ireland were inclined to think they had a peculiar burden to bear in competing against State-aided electricity supply, but, judging from the discussions he had heard among gas engineers from England and Scotland, their difficulties were by no means unique. There were parts of Great Britain where tenants of municipally-owned houses were not allowed to have a gas supply. A recent question in Parliament elicited the fact that at least 80,000 householders were definitely barred from using gas, although wishing to do so. "Free" wiring schemes were also robbing gas undertakings of valuable consumption, with no apparent benefit to those availing themselves of this method of securing an electricity supply. They in Ireland were at least free to supply all who asked for gas or could be persuaded to adopt it. He did not for a moment wish to minimize the competition they had to face, but he wished to draw their attention to the fact that others have as hard a battle to fight elsewhere. Their thanks were due to those who were striving to assert the right of free choice for the consumer in the matter, as any important changes across the Channel were bound to affect them sooner or later. He wished to thank the members for having given him the opportunity to represent them on the parent body; and he was glad to say that the duty had given him pleasure. He would now like to propose that Mr. Buckley be appointed their representative for the coming year.

Mr. A. Law (Limerick) seconded this, and it was agreed to.

### Experiences in Small Towns.

Mr. D. McIntyre (Dungannon) then read a paper on "Gas Sales in Small Towns."

Mr. L. G. Young (Carlow) followed with one entitled "Experience in Carlow."

These, with a report of the combined lengthy discussion to which they gave rise, will appear next week.

## A TALK ABOUT OURSELVES.

By F. J. Edmonds, Waterford.

In submitting this Review to you, I do so with the knowledge all are fully conversant with the subject. At the same time,

COMMITTEE OF THE IRISH ASSOCIATION OF GAS MANAGERS, AUG. 19, 1930.

Front Row (left to right): Messrs. L. Phillips (Auditor), L. G. Young, W. J. Buckley (President), G. Walmsley, G. Airth (Hon. Secretary).
Back Row: Messrs. W. Dalby, D. McIntyre, A. Law, G. A. Gilmore.

I make no apologies for inflicting it upon you, as I feel the time is very opportune for this Association to consider as closely as possible the welfare of the gas industry in Ireland, and in doing so you will all readily agree that the methods adopted by the industry in the last decade are not altogether suitable for present day conditions. Then, there was certainly competition, but not from a competitor whose business was receiving the support of the Government of the country—which support might rightly be claimed as " State-aided."

In the past our chief competitor—electricity—had to conduct its business so that at the end of the financial year its resources would balance out on the credit side. If not, the only alternative was to adjust its charges to enable it to secure a credit balance. But now the position is changed. We have a Government who has thought fit to sponsor electricity and to grant it all manner of concessions one of which alone, the rating of new buildings (the Minister of Industry and Commerce stated quite recently in the Dail that in the interest of electrical development new property into which the State was putting about £5,000,000 should be exempted from rates), is sufficient to be a very handsome donation towards the credit side of their balance-sheet and one which, I venture to say, if allowed to the gas industry in like proportion to the ratio of the capital expenditure involved would assist in the materialization of an all-round reduction in the price of gas. This, however, is not an attack on any electrical concern, because, in all fairness, we would readily embrace similar concessions if the Government offered them to us. It is really the Government who is to blame for any unfairness and not the electrical companies concerned, so that with the existing conditions we can only express a strong protest against the unfair one-sided action of the Government and then, taking the conditions as they are, recognize that we have sufficient to occupy us in so managing the manufacture and distribution of gas as to secure for the general public a commodity economical in consumption, cheap in price, and attractive to use. I only include these last few remarks to emphasize that we are up against entirely new circumstances under which to conduct our business.

The purpose of this paper is to review our present position in a broad and very open-minded attitude, and, after placing a few comparisons between gas and electricity before you, to leave the matter to an open discussion, which it is hoped will be freely indulged in and ultimately prove to be of some lasting good to the advantage of the gas industry in Ireland and especially to the smaller undertakings.

At this point we might readily ask ourselves—Is the gas industry doomed? Is it no further use in promoting the welfare of this country? Has its usefulness to the general public reached its maximum and will the electrical competitor gradually absorb all gas' usefulness until it is no longer a necessity? My opinion is that the life of the gas industry in Ireland is almost entirely in the hands of those holding the reins of management—namely, ourselves. If as a body we are satisfied to let the goods we have for disposal sell themselves, the sooner we are disillusioned the better; and if the advent of the electrical competition does nothing else but clear our vision in this direction it will be a blessing in disguise. I maintain most emphatically that the gas industry has yet a very important part to play in the history and progress of this country, and if given fair play and opportunities for full utilization, can and will do a great deal towards the progressive welfare and prosperity which we hope will soon show signs of materializing, for gas has a very great service to offer in its utility, its means of labour saving, its low cost, its general adaptability, and the facilities offered for a ready supply, day or night, as and when required. But people need educating in the knowledge of its usefulness. Its capabilities must be made known, and this can only be done by judicious advertising. The word " judicious " is used because it is felt we can gain the public's confidence quicker and with more lasting results when they know the service offered is all we claim it to be. As to whether the industry has reached its maximum usefulness, statistics from such companies as Belfast, Dublin, Cork, and many other places, showing huge increases in gas consumed over their respective previous year's figures is a sufficient answer. As to gas being eventually replaced entirely by electricity, the reply is to refer you to America and Canada—the supposed homes of electricity. There, statistics go to show that while electricity has been long established the general public are only now realizing the wonderful service gas can offer, and, in consequence, the consumption in these countries is increasing by leaps and bounds. Toronto can be taken as an illustration, for with electricity at ½d. per unit only 2000 electrical as against 150,000 gas cookers are in use.

### How to Offer Service.

Now let us consider how best we can offer our services. After deciding on the B.Th.U. value it is intended to supply, there are three factors of paramount importance to which every manager should give daily attention. They are—uniform quality, uniform pressure, and uniform specific gravity. The latter is of least importance, and fortunately so, because it tends to offer a difficulty for small undertakings to control; but the other two should offer no difficulty.

Having the ideal commodity for light, heat, and power the remaining activities from this point can be summed up in one word—" Salesmanship "—for although a gas undertaking is supplying a gas of even quality and pressure and with the specific gravity of the gas also uniform, you will assuredly agree that these factors alone are not sufficient to sell your gas. And why? Because in the first instance, and as previously mentioned, the general public must be educated in the value of gas for all purposes of light, heat, and power, and when so educated the fact remains that the gas has to be utilized in apparatus which will ensure the best results. It therefore demands that all appliances, whether for domestic or industrial requirements, must be of the very best workmanship and carry a high hall-mark of efficiency, otherwise, all efforts in supplying gas containing the qualities mentioned would be futile. Manufacturers of appliances have responded in doing their part by carrying out, at a very great expenditure of money and patience, research work which enables them to produce appliances which are almost all to be desired. Our kindred undertakings have done so much that it rests with gas companies to further their efforts by carrying on a very keen form of propaganda in their own particular areas in a manner best suited to local conditions, ensuring that all employed in fixing and fitting up the apparatus are not only competent to do so, but that they carry out their work efficiently and in a manner pleasing to all. It must be remembered all employees of gas undertakings who come into contact with consumers are part of that organization to be known as gas salesmen; each and all are part of the advertising scheme, not only in the efficient way they conduct their respective duties, but in their character, manner, and dress.

### The Showroom.

It is not possible for every gas company in Ireland to own a very attractive showroom with well trained attendants. It is felt, however, that some success can be achieved by co-operating with local tradesmen to the extent of hiring a window or the placing of appliances in shops. Whatever accommodation is available it will be found that gas appliance manufacturers offer considerable help to-day in the artistic and varied displays they are more than willing to loan. This means of help, together with the manufacturers' advertising methods and the valuable assistance of the " B.C.G.A."—the service of which organization is as much for small as large undertakings—should, combined, materially overcome the disadvantages small undertakings experience by the lack of first-class showrooms. And here let it be realized that the asset of a showroom, or substitute, cannot be reckoned in £ s. d. There is the moral effect; and it might be argued that there is a duty on all gas companies to provide a suitable and easily accessible place in pleasing surroundings—not on a gas-works—whereby customers can see and readily become acquainted with appliances available for their use, even though the facilities offered appear at the outset to be provided at a slight financial loss. How many managers having no showrooms have experienced, with surprise to themselves, the stir and commotion a small cooking demonstration has created when held in their district, and how many have been told by customers the same story " We had no idea there were such lovely appliances. Why didn't you show them to us before?" The constant display of up-to-date cookers, &c., cannot fail to keep the name of gas in the public eye, and, what is more, it is seen in a pleasing manner. There need be no hesitation in saying the company that keeps its business always before the general public and occupies a fair share of the publicity to be obtained in the area of its supply is the company you may look to as doing the best business in proportion to the population it has to serve and the nature of their requirements.

### Advertising.

We are living in an age of advertising, and if we look round we can learn a great deal from other industries. There is in this City of Dublin a large business concern which, it is believed, until recently never advertised in papers. To-day you will find it hard to pick up any paper of importance, published outside Ireland, without seeing their advertisement.

There is yet another means for securing the fullest advantage of advertising, which might be considered the greatest of all—gas exhibitions. In this manner one can combine displays for light, heat, and power and conduct cookery demonstrations. It is considered that there is nothing more valuable as a selling factor than practical demonstrations of the capabilities of the gas and appliances you have to offer, and if (say) once a year, or even alternate years, a week is devoted to this form of propaganda, the undertaking conducting them will secure results far outweighing the expense and trouble involved.

Nowadays in conducting sales we are often asked to give comparative costs between gas and electricity. It might not, therefore, be out of the way to include in this Review the following notes on tests carried out.

### Comparisons.

The fundamental comparison between the two media is, of course, the quantity of energy in the form of heat that each

is capable of developing. Electricity is sold by the kilowatt or Board of Trade Unit, each of which units when completely converted into heat gives 3411 British Thermal Units. Gas is sold by the therm of 100,000 B.Th.U. Consequently 1 Board of Trade Unit equals 0·03411 therm; and 1 therm equals 29·32 Board of Trade Units or kilowatts.

These relationships are, as already stated, based on the full development, by suitable means, of the heat contained in the kilowatt and in the therm. In practice, only a certain proportion of these full equivalents can be utilized in doing work, that is, in cooking or heating. The proportion that can be utilized is indicated by what is known as the thermal efficiency of the appliance used. Thus when we say that a boiling burner, for instance, has an efficiency of 75 p.ct., we mean that the particular combination of kettle and burner is only capable of utilizing, that is, transferring to the water, ¾ the heat units developed by the gas actually burned.

It will be apparent, then, that while the fundamental comparison of the two media is that already stated, the actual practical comparison depends also on the efficiency that the particular nature of such medium, and therefore of the appliances that are suited to each, allows to be developed. Once the practical comparison—that is, the comparative efficiency—has been determined we are enabled by means of the price quoted to go further and make our final comparison—namely, the financial comparison, by which eventually the public judges the merits of the two competitors.

The above statement reduces the matter to its simplest form. But there are other factors that must be taken into account before final judgment can be passed. These are initial cost of appliances; running costs of renewals and repairs; and convenience in working to the user. The last is a very important factor and one somewhat difficult to assess.

Let us now consider these points with relation to cookers.

*Hotplate Work.*—Compared with gas hotplates this is the worst feature of the electric cooker. The usual "element" heating arrangement depends entirely on radiant heat passing from the element to the kettle; or else, if the element be protected by a metal plate, the heat has to be conducted through the plate (after the latter has been heated by radiant heat) and imparted to the kettle by contact. It will be understood that at its best this is a very inefficient arrangement, while should either the plate surface or the kettle bottom be irregular or in the least dirty the disadvantage is greatly accentuated. When it is understood that by far the greatest proportion of cooking is done on the hotplate, it will be realized that this inefficiency is a very telling point against electricity. There is, however, a further point which will impress itself on the user immediately, and that is the extremely slow working of an electric hotplate. So patent are these two faults of a large current required and a long time taken that many electrical undertakings have been able to keep electric ovens in use only by providing gas rings or even gas hotplates to supplement the electric oven. In passing, it may be said that the actual thermal efficiency obtained for boiling water is about 20-30 p.ct. with a possible maximum of 35 p.ct. under entirely favourable conditions.

For boiling water alone it is only fair to state that electric kettles with enclosed elements are, on the other hand, extremely efficient, giving some 80-90 p.ct. return in the water for the current expended. Against this must be put their high first cost and the trouble and expense of renewing the elements from time to time, which is not a remote contingency. The actual total energy used to get a certain result in hotplate work is then greater with electricity than with gas.

*Oven Work.*—Taking all things into consideration and allowing oven and hotplate use with the full proportion of electric kettle use, where that is permissible (such as in boiling water for tea, &c.), it is estimated that the relationship for equality between gas and electricity on the practical comparison is that a therm is worth 25 kilowatts, as against the fundamental comparison in which, as already stated, a therm is worth 29 kilowatts.

*Financial Comparison.*—This leads to the financial comparison, and from the figure given above it is clear that to enable electricity to compete with gas in the matter of quantity used for work done, the kilowatt or Board of Trade Unit must not cost more than 1/25th of the gas cost per therm, or, to give examples, if gas be

8d. per therm, current must not exceed 0·32d. per unit
12d. " " " " " " 0·48d. "
All charges considered.

Obviously, the price per therm multiplied by 4 and divided by 100 gives the equivalent price per unit.

Electricity at these prices is very hard to seek, and to enable gas salesmen to reckon for themselves, at their local costs, how much more the user will have to pay for all-round cooking by electricity than by gas, the procedure is to multiply the cost of current in pence per unit by 25 and divide the result by the cost of gas in pence per therm.

For instance,

$$\frac{1{\cdot}5 \times 25}{12} = 3{\cdot}12$$

that is, with electricity at 1½d. per unit and gas at 12d. per therm, electric cooking would, in such case, cost three times as much as gas cooking.

In making these calculations it is well for those residing in the Irish Free State to remember that current is supplied at certain rates plus a charge on the rateable value of the house. The amount to be added to the price per unit from this cause depends, of course, on the total number of units used.

*Initial Cost of Appliances.*—This varies, of course; but, in general, the cost of electrical appliances is considerably higher than that of gas appliances for the same purpose.

*Running Costs of Repairs and Renewals.*—Here again the advantages are greatly in favour of gas. Electric elements do fail and are comparatively costly to renew, whereas it is difficult to imagine in what way gas appliances for cooking can fail. Neglect to clean gas appliances may reduce their efficiency, but that concerns the particular user, and, in any event, the result of such neglect is not total failure of the appliance to perform its work.

*Convenience to the User.*—It has already been mentioned that electric hotplates are slow, and the same disadvantage applies to the initial heating up of ovens. Once heated, the oven temperature depends on the use of the various switches giving two, or at the most, three different rates of heat supply. There is also a considerable lag in the change of oven conditions after altering the switches. This lack of flexibility in manipulation compares very unfavourably with the ease and flexibility of gas-heated appliances generally, where a single tap controls the heat to any degree between the merest glimmer to full-on. Gas ovens also allow of the use of automatic cooking control, by means of which the exact oven conditions required are quickly attained and are thereafter maintained indefinitely as long as is necessary.

### The Loss of Weight Argument.

There remains one matter to mention. Electricians always make a particular point of claiming that the loss of weight of joints and the like is very much less when electrical appliances are used than with gas appliances. Extended tests from different sources have entirely disproved this claim. The plain fact is that given equally cooked food the losses are practically the same no matter which cooking medium is used. Since the loss of weight is nearly entirely due to water, it is difficult to see how any other idea came to be held. It is not disputed that the loss of weight shown by electrical protagonists is a low one, but it is accounted for by the fact that there is a tendency for electric ovens to cook the joint on the outside before it is finished throughout. But, as already stated, given equally cooked food the gross losses are about the same, while the net losses—that is the cooked joint weighed *plus* the dripping—are in favour of gas, because there is apparently a tendency in electric ovens to destroy the dripping. A well cooked joint may be said to lose about 25 p.ct. in the process, or if the dripping be weighed, the net loss will be found to be in the region of 12 to 16 p.ct.

Before leaving this subject of cooking, the following data, the outcome of a test carried out by Mr. H. H. Thomas, B.Sc., of the Liverpool Gas Company, might be of added interest:

Practical test of a simple-hire gas cooker and a simple-hire electric cooker when cooking the same dinner (for six persons).

Menu.

| | |
|---|---|
| Tomato soup | Potatoes |
| Fried plaice | Cauliflower |
| Ribs of beef | Fruit tart |
| (4 lbs. 1 oz.) | Cheese straws |

Time taken to raise oven to cooking temperature:
Gas cooker, 5·5 minutes; temperature attained 489° Fahr. Electric cooker, 24 minutes; temperature attained 355° Fahr.
Time taken to cook joint (oven "on" to oven "off"):
Gas cooker, 60 minutes. Electric cooker, 85 minutes.
Time taken to cook complete dinner:
Gas cooker, 67 minutes. Electric cooker, 85 minutes.
Maximum temperature attained:
Gas cooker, 590° Fahr. Electric cooker, 410° Fahr.
Control of oven temperature:
Gas cooker, instant control. Electric cooker, considerable lag between movement of switch and actual alteration of oven temperature.
Energy used:
Gas, 45·51 c.ft. Electricity, 5·631 units.

Cost to cook complete dinner where the Poor Law Valuation of houses is £23-£28 and electricity at 1d. per unit:

| | Cost of Gas. d. | Cost of Electricity. d. |
|---|---|---|
| Gas, 45·51 c.ft., or 0·216 therm at 12d. per therm | 2·592 | — |
| Electricity, 5·631 units at 1d. per unit | — | 5·631 |
| Rateable charge assuming 400 units per quarter = 0·78 × 5·631 (P.L.V. charge = £1 6s. per quarter) | — | 4·392 |
| | 2·592 | 10·023 |

This shows that with the charges for each commodity at the

prices quoted electrical fuel costs are almost four times as great as gas.

There is yet another point of great importance to be considered—*i.e.*, loss of efficiency after twelve months' use:

| | | |
|---|---|---|
| Hotplate | Gas cooker | No appreciable loss |
| ,, | Electric cooker | 26 p.ct. loss |
| Oven | Gas cooker | No appreciable loss |
| ,, | Electric cooker | 1·3 p.ct. loss |

### Lighting.

In considering lighting there need be very little difficulty in arriving at comparative costs if worked out on the following basis:

Given a gas-filled electric lamp with a general efficiency of 0·8 watt per candle-power and a superheated inverted gas burner 30 candle-power for one hour on a consumption of 1 c.ft. of 500 B.Th.U. standard gas, it is very easy to reckon what the cost would be for each, for (say) 1000 candle-hours.

Electricity.—1000 candle-hours = 1000 × 0·8 = 800 watts; and taking the flat rate at which electricity is being supplied in the Irish Free State—*i.e.*, 6d. per unit—the cost would be 8/10ths of 6d. = 4·8d.

Gas.—500 B.Th.U. (1 c.ft.) = 30 candle-hours.
100,000 B.Th.U. (therm).

$$\frac{30 \times 100{,}000}{500} = 6000 \text{ candle-hours.}$$

Price of gas 1s. per therm—
6000 candle-hours cost 12d.
1000 ,, ,, ,, 2d.

The comparison, therefore, works out in favour of gas as 2d. is to 4·8d.

There are, however, other advantages in favour of gas which particularly appertain to the damp, humid climatic conditions experienced in this country for considerable periods during the winter months, when not only is light required, but heat is also looked for. In the gas lamp you have a medium supplying both, and the latter in a manner which is cheerful and at no additional cost to the consumer. Further, owing to the heat given off by the burners there is a considerable possibility of ventilation. But quite apart from this, the fact that hot air and gases rising from the burners has been proved to make the air at breathing level in a gas-lighted room purer than in an electrically lighted room is worth considering.

So far as public lighting is concerned gas companies in Ireland, or rather in the Irish Free State, are not being deprived of this duty because they can no longer offer a competitive commodity at a competitive price, but for reasons not far to seek and of which you are all acquainted.

It might prove interesting to some to know the best examples of street illumination in the whole world are those in Whitehall, Regent Street, Pall Mall, and on Waterloo Bridge (Strand end), all of which are lighted by gas; also that such places as Berlin and Belfast still adhere to street lighting by gas to the extent of 85 p.ct. and 98 p.ct. respectively.

### Hot Water.

Let us now calculate the cost of obtaining a 20-gallon bath employing the open type of geyser for the purpose. The heating required would be the weight of water multiplied by rise in temperature. If the average cold water temperature be taken as 50° Fahr. and the spout temperature 120° Fahr., the B.Th.U. required = 20 × 10 (120 − 50) = 14,000.

At 90 p.ct. efficiency the amount of heat it would be necessary to supply would be 15,600 B.Th.U. which, with gas at 12d. per therm would cost 1·87d. Calculating on the same basis for the closed type of geyser it would be necessary to supply 18,700 B.Th.U. costing 2·24d.

The efficiency of an electric bath water-heater is approximately 95 p.ct. Consequently, under the same conditions, the heat necessary for obtaining a 20-gallon bath would be 14,700 B.Th.U. If the price of electricity was 2d. per unit the cost would be:

$$\frac{2 \times 14{,}700}{3411} = 8{\cdot}6\text{d.}$$

Having placed these facts before you it is clear that gas has a most useful service to offer to the general public, and, providing people are educated to realize that this great service is "on tap" for them at a moment's notice, we may carry on with a feeling of optimism, providing we all work with the will to succeed. No doubt all present (including myself) feel they are straining every effort in conducting their business, yet we must do that little bit more to ensure there are no channels left unexplored.

### A Testimony from the Opposite Camp.

The following testimony to the value of gas service comes from the opposite camp:

> It would be folly to shut one's eyes to the readiness of gas undertakings to boost enterprisingly their commodity and practically to wait on the consumer's doorstep almost before the emergency has arisen ready to ensure a satisfied customer—there are all sorts of difficulties that require prompt attention if electricity is to be freed from the mystery atmosphere and is not to be open to detrimental comparisons with gas.

Now that is very nice; but it was not meant to be read by gas men. It was intended to ginger up the electricals. While we may be flattered by the nice things our opponents say about us we should be well advised to take a fresh hold and give them an example of service that is worth talking about. We have the "goods" if only we will set our minds to the task. Look at the Gas Light and Coke Company's records for last year—23,320 new consumers and an increase of 89,473 in the number of stoves sold or let out on hire. If every undertaking in this country, both large and small, was doing as well in proportion our electrical friends would suffer a severe depression.

These are but a few remarks, and it is realized they only touch the outside edge of the vast amount that could be written on this subject, yet the comparisons given are sufficient to prove that gas can readily hold its own with its competitor in matters of efficiency and price, providing you are comparing up-to-date gas appliances with up-to-date electrical, and not old dilapidated gas appliances against the latest electrical goods.

### Stick to the True Facts.

Before concluding, there is one point which it is thought advisable should be strongly emphasized here to-day. It is that in any manner of conducting business we must always stick to the true facts and not attempt to side-step or hoodwink the general public by making statements that are inaccurate, and, while not being altogether liable to be termed lies, could very well be called terminological inexactitudes. To illustrate this it is necessary to refer to an advertisement recently spread throughout the length and breadth of the Irish Free State to the effect that for the price of a penny tram ticket anyone could obtain the use of a 25-watt lamp lighting for 40 hours. With electricity at 1d. per unit and the efficiency of the lamp 100 p.ct. this would be correct, but what about the efficiency! And after that, what about the standing charges on the rateable value of the property?

As stated, the idea of this review is not to put before you anything of a technical nature, but simply to draw together a few facts which might extract from members present, by means of a good debate, some basis upon which we can all work during the coming year.

### A Vote of Thanks.

Unfortunately, the proceedings had lasted so long that there was no time for the full discussion on Mr. Edmonds' paper which would certainly have taken place had opportunity been offered. A few points were, however, raised very briefly by Mr. J. A. Pemberton (Sligo), Mr. A. Law (Limerick), and Mr. J. O. Halliwell (Mullingar).

Mr. T. J. Reid (Ballina), proposing a vote of thanks to the author, remarked that the paper contained a great many facts which would be useful as propaganda if they were placed before the general public.

Mr. G. Walmsley (Londonderry), seconding, expressed the opinion that the paper would be very valuable to each member in his own district. They should make up their minds to do everything they could to hold the lighting load, because in this way they would strengthen their chances of retaining consumers for other purposes.

Mr. Edmonds declared his readiness to reply by post to anyone who cared to correspond with him on the subject of the paper.

The meeting closed with some formal announcements by Mr. Airth, who took the opportunity to thank the members for having elected him Secretary for the twenty-fifth time.

### The N.G.C. and B.C.G.A.

After the members and friends, on the invitation of the President, had taken light refreshments in the hotel, there was a long meeting of the Irish District Executive Board of the National Gas Council of Great Britain and Ireland, at which there were addresses by Mr. E. J. Fottrell and Mr. J. C. Walker, which were followed by full discussions. A report of the meeting will be found on other pages.

The chair was occupied by Mr. R. Healy, Secretary of the Cork Gas Consumers' Company.

### Annual Dinner.

The dinner of the Association, which was largely attended, took place in the evening in Jury's Hotel, with the President in the chair. There were many excellent songs and one or two short speeches. Col. Glover proposed "The Ladies," which was responded to by Mr. Russell and by Mrs. Buckley, the wife of the President; and "Kindred Associations" was submitted

by Mr. A. S. Brook, and acknowledged by Mr. E. J. Fottrell. The musical programme at the dinner was excellent, and was thoroughly enjoyed by all.

The Excursion.

Wednesday was devoted to an excursion by rail to Greystones, where accommodation, with luncheon and tea, was provided at the Glydach Hotel. Complete arrangements had been made for a most enjoyable day in the beautiful grounds, but the efforts of those who had been to much pains to make the outing a success were interfered with by the one thing which they were unable to control—a steady downpour of rain keeping the large party indoors during the greater part of the stay at Greystones.

# National Gas Council—Irish District Board

The annual meeting of the Irish Association of Gas Managers was as usual followed by a meeting of the Irish District Executive Board of the National Gas Council of Great Britain and Ireland, the chair at which was taken by Mr. R. Healy, Secretary of the Cork Gas Consumers' Company. All members of the Association were invited to be present.

In the absence of the Secretary (Mr. H. W. Saville, of Wexford), the minutes of the last annual meeting (which were confirmed) were read by Mr. George Airth.

Gas Undertakings in the Irish Free State.

The Chairman expressed the regret of the meeting at the absence from the country of Mr. W. J. Grey, who otherwise would have presided over the meeting. Continuing, he remarked that the presence of Mr. Fottrell and Mr. Walker rendered it unnecessary for him to make a speech. There was, however, one matter to which reference might be made—namely, the importance of letting the public know how much alive the gas industry was nowadays. So much had been said about industrial revivals in other directions, that people sometimes forgot what was being done by the older industries, such as their own.

He had with him the Preliminary Report of the Department of Industry and Commerce on the Census of Production for the year 1926, and the following extracts bore out what he had said. At that time there were 59 gas undertakings in the Free State, and the net selling value of their manufactures in 1926 was given as £1,004,237 made up thus:

| Kind of Goods Made and Work Done. | Quantities. | Net Selling Value of Goods Made in 1926. |
|---|---|---|
| | | £ |
| Coal gas and water gas | (value) | 750,484 |
| Coke and breeze | 80,376 tons | 166,032 |
| Tar | 8,706 ,, | 43,364 |
| Bye-products— | | |
| Sulphate of ammonia | 1,267 ,, | 11,676 |
| Tar oil, creosote oil, and other heavy coal tar oils | 19,948 cwt. | 7,194 |
| Pitch | 627 tons | 2,576 |
| Naphtha and naphthalene | (value) | 709 |
| Other distillation products | 44,843 cwt. | 16,582 |
| All other products | (value) | 340 |

| | Amount Received for Work Done. |
|---|---|
| Fitting up and repairing meters, stoves, and other appliances for customers (excluding cost of meters, stoves, &c.) | £5,280 |
| Total value of goods made and work done in 1926 | £1,004,237 |

In addition, a very considerable contribution was made to the cost of public services by the heavy payments of rates and taxes. Totals of these were not available, but the published accounts of the Dublin and Cork Gas Companies showed that in 1929 these two undertakings alone paid the large sum of £22,988 in rates and taxes. As there was so much propaganda at present in favour of other industries, it was well that they should keep the merits of their own business before the public, and bring home to all the fact that, both as an economical and useful provider of light, heat, and power, as well as a very large employer of labour and payer of rates and taxes, the gas industry was one that was absolutely essential to the economic life of the nation.

Office-Bearers.

Mr. J. D. Smith was appointed Chairman of the District Executive Board for the ensuing year, and Mr. W. J. Grey Vice-Chairman.

The following Management Committee were appointed: Messrs. G. Airth (Dundalk), R. B. Anderson (Waterford, &c.), R. Healey (Cork), J. McNicholl (Cork), B. Mitchell (Bangor), J. O'Flaherty (Galway), J. Ronan (Waterford), J. A. Rooney (Drogheda), G. Walmsley (Londonderry), and A. Law (Limerick), with the Chairman and Vice-Chairman of the District Executive Board.

The representatives on the Central Executive Board were reappointed, as follows: Messrs. R. B. Anderson (Waterford, &c.), W. J. Grey (Dublin), J. McNicholl (Cork), and J. D. Smith (Belfast).

Mr. H. W. Saville (Wexford) was re-elected Hon. Secretary.

### ADDRESS BY MR. E. J. FOTTRELL.

Joint Manager of the National Gas Council.

Mr. Fottrell said he was down to give a review of the work accomplished during the past year. Though at first sight there might not seem in what had been done a great deal of direct interest to Ireland, it had to be remembered that what concerned the gas industry in one place had also an influence upon it in others. There was a growing bond of union between the gas supply services of all countries. At meetings in England there was to be found an increasing number of representatives from the Continent of Europe, the United States of America, and Canada; and this was being reciprocated. The effect of this international co-operation among the gas industries of the world was shown clearly by the part which gas had played in the World Power Conference. There was in Berlin this year a second meeting of that Conference, and if the list of papers presented then was compared with that presented at the first meeting at Wembley in 1924, a clear idea would be gained of the growing recognition of the part played by gas in modern civilization. Whereas in 1924 there was little interest evinced in gas, in Berlin this year a large part of the programme was occupied by papers presented by the principal gas countries of the world.

There were three features of the past year's work which had a semi-direct bearing upon conditions in Ireland. A great deal of the time of the Council had been spent on an English political measure called the Coal Mines Bill. He said "political," because there was no industrial demand for it. It was introduced to give effect to election pledges that the working time of coal miners should be reduced. The Government recognized that some sort of political jugglery was necessary, and the effect of this upon the gas industry was probably going to be greater than upon any other section of the coal consuming public. The conclusion had been arrived at by those in authority that the gas supply authorities were paying less than an economic price for their coal, though the gas industry found this rather hard to understand, in view of the rates they were asked to pay. The Bill, in effect, authorized the coalowners to differentiate between purchasers of gas coal and purchasers of coal for any other purpose. This was serious. To-day, facing competition by solid fuel, oil, and electricity, it was imperative that the gas industry should not have any artificial barrier put in the way of a reduction of their costs. He feared that the Bill would have the effect of raising artificially the price paid for gas coal as compared with coal for other purposes.

A great deal of the time of the Council had been devoted to making manifest the gross injustice of anything of this kind, and the serious effect it must have on industrial and social development. After an immense amount of work, they had succeeded in getting some amendments made which in theory gave them an opportunity of protesting against any price that might be fixed for gas coal. He did not argue for a moment that they had achieved anything like the success they had hoped for, and he was satisfied that they had received nothing like the justice to which they were entitled. All he could say was that probably the Bill as passed into law was not so disadvantageous to the gas industry as would have been the measure as originally introduced.

Over and above this, Ireland had been threatened with the formation of an Irish Coal Marketing Scheme. The Association, he believed, might take credit to themselves for having been the body responsible for exposing that undesirable scheme. The National Gas Council had naturally rendered what assistance they could.

The other matter to which he wished briefly to refer was legislation. Legislation in different countries took different forms. There was, however, one aspect which was common to both Ireland and England—namely, the difficulty under which statutory companies laboured in regard to the establishment of equitable tariffs for the sale of gas. There was no time now to discuss this question in detail. He might, however, tell them that he was sufficiently optimistic to hope that next spring the British Parliament would introduce a Bill putting the gas industry upon an equality in this regard with electric supply

undertakings. Personally, he felt perfectly satisfied that the Free State Government were prepared at any time to introduce a similar measure, and he was given to understand that the Government of Northern Ireland was equally friendly disposed. Some progress, therefore, had been made so far as statutory undertakings were concerned; but there existed to-day in Ireland a large number of non-statutory concerns, and they possessed at the moment the power to introduce any tariff which they might think fair. An endeavour should be made to secure from every consumer something like a reasonable return on the capital costs imposed by him on the undertaking. They had had a considerable amount of experience of this on the other side of the Channel, and the members had heard that day of similar experiences in Ireland. Whether it would all be applicable to statutory undertakings, he was not prepared off-hand to say.

The point they had to consider now was that in the case of a large number of undertakings in Ireland, facilities existed at the present time for some pioneer to come along and prepare the way for those other undertakings who were not yet in a position to act for themselves. Surely someone could be found who would carry the matter a stage further. He felt strongly that the question of gas tariffs was one of outstanding importance to-day, if they were successfully to fight the competition, not only of electricity, but also of oil and solid fuels.

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A lengthy discussion ensued, at the conclusion of which Mr. Fottrell was heartily thanked, on the proposition of Mr. A. Law (Limerick), seconded by Mr. G. Walmsley (Londonderry), both of whom made reference to the prompt and adequate manner in which the Council accede to requests for information.

Mr. Fottrell, responding, pointed out that the value of such an organization depended largely upon the extent to which it was made use of.

On behalf of the British Commercial Gas Association, Mr. Walker then addressed the meeting.

## WORK OF THE "B.C.G.A." DURING THE YEAR ENDED AUGUST, 1930.

By J. C. Walker, Secretary of the British Commercial Gas Association.

### Aims and Objects of the "B.C.G.A."

The "B.C.G.A." is a central co-operative body for the primary purpose of educating all classes of the community in the advantages which the gas industry offers in the most economical, labour-saving, and hygienic method of using the nation's resources for light, heat, and power by advertising campaigns regularly conducted in the Press and by general propaganda.

It is desirable that the activities of the Association should be so defined to differentiate between national effort, which is in effect creating a desire, and local effort, which is, or should be, converting desire into action. The two are closely related, but no amount of national can be a substitute for local activity, and national effort can only be effective in so far as it is backed up by the progressive policy of gas supply undertakings.

It is impossible—and in some respects it would be unwise even at a meeting such as this—to describe in detail the various activities of the Association; and I propose, therefore, to give a general outline of the principal features of our work during the past year.

### National and District Publicity.

The Association's policy during the year in its Press advertising has been designed to bring home to the public that gas is not merely the fuel of to-day—the fuel that serves the whole nation to-day with heat for every domestic, industrial, and commercial heating purpose—but that it is the fuel of the future. We have endeavoured to combat the feeling that gas is becoming a back number.

This policy has been supported by the facts and figures in the Association's files and by new incidents as they become available. In our advertisements we have proved our argument by using as the basis of headlines and copy recent installations of gas equipment on a large scale in housing schemes, factories, hospitals, hotels, &c. In each case we have used as examples the most recent installations.

Our advertisements have, therefore, been of a topical character, since almost every new building to-day receives wide publicity on account of the changes both in building construction and in interior decoration.

Important and striking installations of gas in London and provincial cities have been featured in the advertisements, which are arousing considerable interest among, and bringing an increasing number of inquiries from, the public.

In addition to the main theme outlined above, the Association is emphasizing in particular the use of gas for water heating and gas fires.

### Water Heating.

The introduction of the new type of thermal storage water heater with its relatively low maximum consumption and simplicity and reliability of action has opened up an extended field for the use of gas for this purpose, of which many gas supply undertakings have quickly taken advantage. Some undertakings are already finding difficulty in handling the inquiries received from consumers; and this evidence of interest is confirmed by the postal and personal inquiries received by the Association.

### Gas Fires

During the coming autumn and winter months the Association will be inserting in the national and district newspapers a series of new and striking illustrated advertisements dealing with gas fires. In addition to the well-known advantages of gaseous fuel for room heating, we shall stress the importance of "the fire which ventilates as well as heats" with the object of countering the growing practice among some builders of constructing rooms without ventilating flues.

### Lighting.

This receives its due measure of prominence in Association publicity. Special attention is being paid to street lighting, and a paper on the subject prepared for the Association is being presented at the annual meeting of the Association of Public Lighting Engineers at Leicester next month.

### Local Publicity.

There are available specimens of the advertisements which the Association provides for the use of members in their local newspapers. Blocks of these advertisements are supplied at very reasonable cost; and a sufficient variety is available for a complete year's advertising campaign.

### Local Sales Development.

The very wide range of publicity material which the Association prepares is all designed for use in connection with local sales development. The material is supplied on a co-operative basis, which means that the smallest undertaking is able to purchase relatively small quantities on the same terms as the bigger purchases of the larger undertakings.

Personally, I believe that gas managers could make more use than they do of this service. It may be that you have your own ideas as to the particular type of publicity material which is best suited to your local conditions and requirements. If what the Association is producing does not fulfil those needs, tell us, and we will do our best to supply you with the right article.

The fact that our sales of publicity material last year reached the record figure of £17,000 indicates, to some extent at least, that the material we are producing is right for the bulk of our members.

### Education for Gas Salesmen.

Lastly, I would refer to the Scheme of Education for Salesmen which the Association is formulating and which we hope will be launched in the New Year. The scheme will aim at providing a sound correspondence course of education, and will thus be available to every gas salesman irrespective of geographical domain.

An outline of the scheme will be presented to the members at the Annual Conference in Hull in October next.

### How Ireland Benefits from "B.C.G.A." Advertising.

"B.C.G.A." advertisements are regularly inserted in the following groups of media: National daily newspapers, district daily and weekly newspapers (Dublin, Belfast, Cork, and Londonderry), illustrated popular weeklies and monthlies, medical journals, architects' and builders' journals, and trade journals. We have proved on many occasions from inquiries made of the principal booksellers that a very large percentage of the media used by the Association have a regular sale in Ireland.

### What is the "B.C.G.A." Going to do for Ireland?

Mr. Airth asked this question at the meeting to which I referred earlier in my remarks, and in the meantime we have considered what answer we could fairly give to the question.

What we spend on publicity in Ireland, as in other districts, is governed by the amount of money subscribed by the districts. It is impossible to organize a national and district publicity campaign on any other basis. We are already spending the full quota in the more important Irish newspapers, and, with a view to co-operating with and assisting the smaller undertakings, we have agreed for the next twelve months at any rate to include in the schedule several of the papers with good local influence but of lesser importance as district media.

That is a practical gesture by the Association for the assistance—so far as publicity is concerned—of the smaller undertakings. It is pertinent to examine, therefore, the measure of support which the Association receives from the smaller undertakings in Ireland.

At the present time there are practically 50 with a total output of nearly 800 million c.ft. per annum who are not members of the "B.C.G.A."

If these undertakings and those who are already members were contributing on the full basis to the funds of the national bodies, the proportion of the total subscriptions which would

come to the " B.C.G.A." would permit of regular publicity in the newspapers in Ireland.

Such a campaign backed up by good local service would do much to counter the effects of electrical competition in the districts affected.

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This was followed by a discussion, after which, on the proposition of Mr. J. A. PEMBERTON (Sligo), seconded by Mr. T. J. REID (Ballina), a Special Sub-Committee, comprising Messrs. George Airth, A. Law, and H. W. Saville, was appointed to deal with the question of gas advertising in Ireland.

Mr. Walker was accorded a hearty vote of thanks for his address, on the motion of Mr. A. S. BROOK (Lisburn), seconded by Mr. L. G. YOUNG (Carlow).

# Influence of Size of Coal During Gas Manufacture*

If the title is a little misleading (because gas manufacture is not carried out under test conditions with certain arbitrarily standardized features), this paper is one of extraordinary interest to the carbonizer, though he will need some ingenuity to deduce from the data here given what results he would be likely to obtain in practice.

After a historical survey of previous investigations into the effect of size of coal on carbonization, the paper describes the three coals used in the tests reported, with the method of their preparation. This is followed by the details of tests in horizontal retorts with three different coals each in three different sizes, nine tests in all, and these again by a similar series of tests in continuous vertical retorts all at a standardized throughput. Finally, we have three further tests in the verticals with the throughput taken to the maximum. The production of gas, coke, tar, and ammonia in each case is analyzed, and an attempt is made to draw some conclusions from the results obtained. And lastly there are conclusions regarding the effect of the system of carbonization.

Generally, the effect of varying the size of the pieces of coal charged to horizontal retorts is very small. As regards gas production, the best results were obtained with medium pieces of all three of the coals, Mitchell Main, Dalton Main, and Shafton Main, the first of which is a well-known strongly coking coal, the second a medium coking coal, and the third a high volatile coal less strongly coking than the other two.

But when we turn to the results in the continuous verticals we find an extraordinary difference. To paraphrase one of the conclusions on p. 36, any advantages or disadvantages arising from the different size and quality of the coals carbonized are fully brought out in the continuous vertical. Unfortunately the constants laid down for the investigation, while quite in accordance with the lines generally followed at the Fuel Research Station, have nothing to do with practical working. It is very interesting and valuable, no doubt, to ascertain what will happen when you carbonize three very different coals each in three different sizes—that is, nine different coals—all at the same temperature, all with the same throughput, and all with the same percentage of steam. But it is a little troublesome to translate the results into data useful in the retort house where temperatures, throughputs, and steam admission are adjusted to give the best and most economical yield of gas and coke when making gas to comply with the law—that is, at a given calorific value.

In the historical survey mention might have been made of Mr. Thomas Glover's tests at Norwich, where he obtained slightly better results, particularly as regards therms per retort, with large and small nuts in equal proportions.

Coming to the paper in detail we wonder whether the trouble with deposits in the collecting main was really entirely due to dust being carried over from the small coal or to salts due to high temperatures in the ascension pipes.

We take leave to question whether anything like 90 p.ct. of the steam introduced to the retorts was actually decomposed. Of course, this is a straight retort—that is, not of the design with the " steaming chamber "—but, even so, we have always thought a higher percentage of steam would be decomposed with small than with uniformly large coal.

There seems something contradictory in the statement on p. 24 that the Shafton coke contained more over 2 in. than the other cokes; the table above, on the same page, shows less in two cases out of the three tabulated.

With regard to yields of gas, we are unable to see what is shown by the " graphical representation " in fig. 6 on p. 26. The word " therm " is without meaning unless coupled with the calorific value at which it is measured. We should say that, under these quite artificially arranged conditions, the small coals give in every case the best yield of gas, and that there is a steady progression from large through medium to small, but that in every case there is so big a jump from large to medium as to be only explicable by the supposition that the throughput was always much too small for the large pieces. Actually the results are slightly better when the throughput is increased in Tests X. and XI, and considerably improved in the case of the Dalton Main large in Test XII., which bears out our view. And we make this statement against the very misleading ones on p. 32.

When reading to the bottom of the same page, it will, of course, be noted that cost of coal is not the least of the features which have to be considered when the selection is made. And it is impossible to ascertain what would be the difference in the yield per retort until the maximum production *at the particular calorific value* has been determined.

These considerations invalidate several of the conclusions on pp. 35 and 36; and in reading the first conclusion on p. 37 it should be remembered that the vertical retorts were operated with combustion chamber temperatures 100° C. lower than those of the horizontal retort settings.

The conclusion that the use of carefully selected, clean, screened coals enables the continuous vertical retort to be operated with ease and with the maximum flexibility is amply confirmed by these tests, and the common practice of adding a proportion of slacks to gas coals from Yorkshire and Lancashire to strengthen the coke is also justified.

We should like to see these tests repeated with the production of gas at, say, 475 B.Th.U. per c.ft. as the only constant in the investigation.

TAMBT.

* Department of Scientific and Industrial Research, Fuel Research Technical Paper No. 26. H.M. Stationery Office, Adastral House, Kingsway, W.C. 2; price, 1s. 3d. net.

## Possible Improvements in the Gas Industry.

A paper read by G. Offe, of Cologne, at the conference of the Union of the Gas, Electricity, and Water Engineers of the Rhineland in March last is reproduced, with the discussion, in " Das Gas- und Wasserfach," 1930, **73**, 775-785 (Aug. 16). The author makes brief reference to pointing and hot patching cements for retorts and to washes which are able to form a glaze on the brickwork and are compounded from sodium chloride, carbonate, or silicate and iron oxide. Such washes are presumably applicable only to firebrick retorts.

### COATING OF MAINS.

As regards mains, it is pointed out that, in the case of gas let down with blue water gas, the proportion of heavy hydrocarbons is reduced and corrosion of the mains is more likely to occur. Though tarred mains may be used to minimize this, the coating must be of a suitable nature in order that it may not be dissolved and carried forward by constituents of the gas. Cases have been experienced in which the jets of inverted incandescent mantles have become choked with tarry deposits due to the use of unsatisfactory coating material. Where solvent action does occur, the coating ultimately flakes off and corrosion will take place. Manufacturers of mains must be forbidden to make use of unsuitable coating material. In the discussion it was mentioned that bakelite solution had been employed with good results.

After referring to the harm caused in gas appliances and to ferns in living-rooms by sulphur dioxide arising from the combustion of the organic sulphur compounds in gas, and putting forward the plea that there should be a serious search for a suitable method of eliminating these compounds, the author came to his main theme, the proper ventilation of gas appliances such as gas radiators, geysers, and other types of water heaters. He described a new down-draught interceptor designed by himself from the point of view of rendering the appliances immune from atmospheric effects and increasing the carbon dioxide content and temperature of the chimney gas, and thereby increasing the efficiency of the apparatus, and preventing condensation of water. The life of the appliance is consequently increased, for the formation of solutions of sulphurous acid which are responsible for corrosion is prevented.

In the course of the discussion, the author's views on ventilation were criticized, and doubt was expressed as to the utility of the interceptor. It was stated that much of the trouble was due to lack of co-ordination between builders, architects, and makers and sellers of gas appliances. Appliances are consequently often fitted in position in which a long length of metal flue-pipe is necessary, and condensation and other ill-effects are thereby caused.

# Continental Notes

## CLASSIFICATION OF COALS.

A. Meurice, Bulletin de l'Association des Gaziers Belges 1930, **52**, 172-196, gives a review of the experience gained during the course of nearly twenty years which have elapsed since his original papers on the subject were published.

In order that the new developments may be appreciated, a brief description of the method of obtaining the agglutinating index and the manufacturing index is given.

### Agglutinating Index.

The agglutinating index is the weight of sand in grammes bound by 1 gramme of the coal under definite conditions of carbonization, with the stipulation that the amount of loose powder resulting from the test shall not exceed 1 gramme.

Sea-sand, extracted with 20 p.ct. (by volume) HCl and passing sieve 40 (225 meshes per sq. cm.) and resting on sieve 50 (335 meshes per sq. cm.) is used. The coal is ground to pass sieve 80 (860 meshes per sq. cm.), though finer grinding does not affect the results. The crucible should not be of platinum, since the results are markedly affected by the condition of the metal. Hence, a porcelain crucible (Meissen, No. 6, height 3·5 c.m., top diameter 4 c.m.) is employed. The working temperature must be 900°-950° C., and a muffle furnace must be employed. This may be heated by gas or electricity. Heating is continued only for as long as is required for the flame of the burning volatile matter to die out.

### Manufacturing Index.

For the evaluation of the (coke) manufacturing index, the agglutinating test is always carried out with a mixture of 17 grammes of sand and 1 gramme of coal. The load required to crush the coked mixture is determined with a new type of crushing machine [manufactured by the Société d'Appareillage Général de Précision, 139 Rue Gray, Ixelles-Bruxelles], which is described and illustrated. The manufacturing index is evaluated from the formula

$$\text{Manufacturing index} = \frac{17\,R}{D}$$

where R is the crushing load in kilogrammes
and D is the weight of loose powder in grammes.

### Classification.

Coals are classified as follows on the basis of volatile content, agglutinating index, and resistance of the coked mass to crushing.

| Volatile Matter. | Agglutinating Index. | Crushing Load. Kg. | — |
|---|---|---|---|
| Above 35 p.ct. | 0–2 | 0 | Lignite ; dry, long flame |
| | 2–6 | *Max.* 3 | Dry, long flame ; feebly coking |
| | 2–9 | 3–8 | Gas coal ; feebly coking |
| 28–38 p.ct. . | 10–13 | 3–5 | Gas coal |
| | | *Min.* 6 | Gas coal ; strongly coking |
| 18–32 p.ct. . | 14–16 | 5–7 | Coking coal ; somewhat poor coke |
| | 17–24 | 4–8 | Coking coal ; normal metallurgical |
| | | *Min.* 8 | Coking coal ; strongly coking, metallurgical |
| 16–22 p.ct. . | 11–13 | *Min.* 6 | .. |
| 14–18 ,, . | 6–11 | *Min.* 6 | .. |
| 11–15 ,, . | 2–6 | About 3 | .. |
| 8–11 ,, . | 0–2 | .. | .. |
| 0–8 ,, . | .. | .. | .. |

The relationship between volatile content and agglutinating index is shown graphically.

The manufacturing index is only used in connection with coals used for coke manufacture and having a volatile content between 18 and 32 p.ct. It serves to indicate whether the coal or blend can give a normal metallurgical coke or whether it should be mixed with a more strongly coking coal, or whether an inferior coal can be mixed with it.

Tests carried out on several thousands of samples show that the limits of reproducibility of the tests for a particular sample are as follows :

| | |
|---|---|
| Loose powder . . . . . | ± 10 p.ct. |
| Crushing resistance . . . | ± 15 ,, |

This means that the maximum variations in the determination of the manufacturing index for a given coal are approximately in the range $\pm 4{\cdot}25\,\frac{R}{D}$. Since the ratio $\frac{R}{D}$ for the coals in question is approximately 10, these variations can give rise to possible errors of ± 45 units in the figure found for the manufacturing index. The mean of four results is, in general, taken, and the final result can then be regarded as accurate to within ± 15 units.

Since the quality of the coke made from a given coal depends on a variety of conditions—*e.g.*, dimensions and type of oven, temperature and duration of carbonization, stamping, &c.—it is advisable not to fix on an optimum index for a particular battery from laboratory studies alone, but to correlate the laboratory results with the plant results in order to arrive at this figure.

As regards conditions in Belgium, the author has modified his previous views, and is now of the opinion that coals with a manufacturing index between 150 and 250 can be used with complete safety. When the index is greater than 250, blending with an inferior coal is possible. Certain complications arise, however, since a given index is possible with wide variations in R and D. The relationship between these factors for a number of coals is shown graphically, and the author concludes that the optimum conditions are obtained when R lies between 6 and 8·5 kg. and at the same time D lies between 0·5 and 1·0 gramme. When the values lie outside these ranges, addition of a more strongly coking coal is necessary, or blending with an inferior coal may be practised, as the case may be. A survey of the results obtained showed that certain coals with an index as high as 250 must be considered as of low quality (R = 3, D = 0·2). Such coals are rare. On the other hand, certain coals with an index as low as 146 can be successfully coked (R = 6, D = 0·7). The need for fixing a minimum value of R is thus seen.

The above principles may be applied for classifying a coal according to whether it is capable of giving a metallurgical coke, or whether it may be used for improving a mixture, or whether it should be improved by addition of a better coal.

Actually, in Belgium, a blend of three types of coal is employed :

(1) German coal. R and D both high. Strongly coking.
(2) Durham coal. R often lower than for the German coal. D low. Very high agglutinating index.
(3) Feebly coking coal.

A résumé is given of the published experience of other investigators with the Meurice procedure. St. Claire Deville had found that a useful accessory test is to take into account not only the agglutinating index but also to plot a curve of the results obtained with smaller ratios of sand to coal than correspond to the index. It is thus found that (1) the amount of loose powder increases regularly with the proportion of sand, and (2) when the proportion of sand is increased, the crushing resistance often increases rapidly at first, remains relatively constant at about a maximum, and falls quickly to a low value in the neighbourhood of the ratio corresponding to the agglutinating index. Kattwinkel found the methods useful, but prefers to express the manufacturing index on the basis of a sand coal ratio of 10 instead of 17. On this basis, he classifies coking coals into groups :

(1) Coke-making coals. V.M. up to 24 p.ct. Manufacturing index at least 100.
(2) Intermediate coals. V.M. about 27 p.ct. Manufacturing index at least 200.
(3) Gas coals. V.M. above 32 p.ct. Manufacturing index at least 65.

Meurice agrees as to the utility of the curves as plotted by St. Claire Deville. As regards Kattwinkel's proposal, Meurice prefers his own procedure for coke-making coals, but finds the ratio 10 useful for coals with a volatile content between 14 and 22 p.ct., since such coals show a negligible crushing resistance at the higher ratio.

The agglutinating index in conjunction with a test for the presence of ulmic acid serves, in the case of a known coal, to indicate whether the coal has been weathered.

The paper concludes with tables showing the agglutinating and manufacturing indices of coals from Belgium, England, Germany, Turkey, and the Far East.

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## NEW METHOD FOR THE MANUFACTURE OF AMMONIUM SULPHATE.

"Chimie et Industrie," 1930, **24**, 237, refers to a paper read by Herr Vorländer at the recent 43rd Congress of the Society of German Chemists. By the catalytic agency of sulphito-ammine-cobalt, ammonium sulphite in solution is rapidly oxidized in the cold to the sulphate by the oxygen of the air, nitrogen being at the same time recovered. The catalyst is not

affected by impurities in the ammonia or in the sulphur dioxide, and is, in particular, unaffected by arsenic.

### REMOVAL OF CARBON MONOXIDE FROM TOWN GAS.

According to "Chimie et Industrie," 1930, **24**, 235, the Harpener Bergbauverein has erected a large experimental factory of capacity 14,000 c.ft. per hour for the removal of carbon monoxide from gas. This is of interest in connection with investigations as to the possibility of eliminating this constituent from town gas.

The reaction employed is $CO + H_2O + CaO = CaCO_3 + H_2$ at a temperature of 500°-600° C. At the same time, the organic sulphur compounds are converted into sulphuretted hydrogen. The carbon monoxide content is reduced to below 1 p.ct. The lime is regenerated at 800°-900° C. in presence of hot air. A shaft furnace holding 20 tons of calcium carbonate is employed. Regeneration requires six hours, and for each cubic foot of gas treated, one third of a cubic foot of crude gas is consumed. The cost is 2·8d. per 1000 c.ft. of gas treated if the hot blow gas of a water gas plant or blast furnace gas is employed. It is pointed out that the substitution of carbon monoxide by hydrogen is undesirable owing to the consequent increase in the speed of combustion, that a more economical method of regeneration is desirable, and that the amount of reagent should be reduced. The process, originally developed with a view to the production of hydrogen for the manufacture of synthetic ammonia, has therefore only been applicable in particular cases. The results of researches now in progress with a view to the catalytic conversion of the carbon-monoxide into methane must be awaited.

# The Composition of Benzole from Gas Manufactured in Vertical Retorts*

By W. A. Voss, of the Gas Light and Coke Company

The work to be described was undertaken in order to determine the quality and quantity of benzole present in the gas made in continuously-operated vertical retorts working under normal conditions and representative of the make over a continuous period of several weeks.

A knowledge of the composition of the benzole present in the gas obtained by vertical retort carbonization is of value for two reasons. First, in view of the increase in vertical retort practice which is taking place in this country, it is desirable to know the quality and quantity of the benzole available from this source, in order that its value for the purpose of augmenting or supplanting the benzole from normal sources may be viewed in its true perspective, and to determine what alterations, if any, would be entailed in the cost of extraction and purification and in plant operation, &c. Secondly, the information obtained may be instrumental in furthering the state of knowledge on what is taking place within the retort and of the coking process generally, by a comparison of the results obtained in this type of retort practice with those of other methods of carbonization. It will be readily appreciated, however, that with a subject embracing such a complexity of reactions and one in which so many factors operate, caution is necessary in making deductions of this kind. In addition to the difference in the method of carbonization, the nature of the distillation products may be affected by such factors as differences in the temperature of carbonization, the rate of throughput of coal, the extent to which the retort is "steamed," and—in the case of horizontal retort carbonization—the volume of free space above the coal in the retort. In normal high-temperature carbonization, however, variations caused by such factors as these appear to have much less effect on the quality of the benzole than the type of carbonization.

Benzole extracted from vertical retort gas is characterized by a higher percentage of unsaturated compounds and of paraffins than that extracted from gas made in horizontal retorts.

In works practice it is not possible to extract the whole of the condensable spirit present in the gas, and it is known that the quality of the benzole recovered will be affected by the quantity of active charcoal used for scrubbing a given volume of gas. A point is reached during the recovery at which the lighter constituents in the gas are no longer removed, and those already extracted become replaced by heavier constituents. The result is that the benzole recovered from plants required to deal with relatively large volumes of gas will tend to be heavy, and at the same time the recovery of benzole per ton of coal carbonized will be proportionately low owing to the quantity of lighter spirit passing through the scrubber unextracted. In extreme cases of this kind, where, owing to insufficient scrubbing plant, due to lack of space or other circumstances, the available charcoal is required to deal with abnormally large volumes of gas, the quality of the benzole is adversely affected owing to its low benzene content and relatively heavy nature. In view of this it was felt that the value of the investigation would be enhanced if the benzole examined represented a definite known extraction expressed as gallons recovered per ton of coal carbonized.

Samples have been examined representing the total condensable constituents in the gas, an extraction of 3 gallons per ton of coal, and an extraction of 1·5 gallons per ton of coal. The 3-gallon extraction was taken as approximating to normal works practice. In addition, the extractions were so arranged that it has been possible to examine the benzole unremoved from the gas during an extraction of 3 gallons per ton—that is to say, the lighter spirit which escapes with the "stripped" gas under those conditions.

The work was carried out on gas made in a vertical setting in which "steaming" was employed and which will be referred to as setting Type 1, and the whole of the work was repeated in a second series of extractions from gas made on a "steamed" vertical setting of a different type (2) at another works. It will be seen that the qualities of the benzole in the gas from the two types of setting show satisfactory agreement. In both cases the coal carbonized was unscreened run-of-mine Yorkshire coal. Data relating to the sizes of the retorts and the throughputs are as follows:

| Dimensions of Retorts. | Type 1. | Type 2. |
|---|---|---|
| Length | 21·5 ft. | 25·7 ft. |
| Cross-section at top— | | |
| Shape | Oval | Rectangular |
| Major axis | 33 in. | 78 in. |
| Minor axis | 10 ,, | 10 ,, |
| Cross-section at maximum— | | |
| Major axis | 39 ,, | 81·5 ,, |
| Minor axis | 18 ,, | 18 ,, |
| Capacity of retort, c.ft. | 65·3 | 226·1 |
| Coal throughput per day | 2 tons 19 cwt. | 8 tons 4 cwt. |

The gas streams were examined at the outlets from the naphthalene scrubbers, and care was taken to see that the minimum quantity of oil necessary for naphthalene removal was used and thus prevent loss of benzole from the gas before its examination.

### Apparatus.

The benzole was extracted from the gas by means of active charcoal in a number of brass charcoal extractors which have been described in detail by H. Hollings, S. Pexton, and R. Chaplin (Trans. Inst. Chem. Eng., 1929, vol. 7). The extractor is shown in fig. 1 in exterior and sectional elevation. It consists essentially of a charcoal filter (A) fitted with a manhole for charging. Through the filter passes a number of heating tubes (B) which connect directly with a boiler (C) and a double surface condenser (D). For simplicity of explanation it will be assumed that the charcoal has been saturated with benzole by passage of gas, and it is desired to distil off the adsorbed benzole. The burner is lit under the boiler (C), which contains aniline, or other liquid of suitable boiling point, and the gaseous aniline passing up the tubes effects a rapid heating of the charcoal bed. The aniline condenses in the double-surface condenser (D) at the top of the apparatus and returns to the boiler by the return pipe (E), which is fitted with a sight-glass to enable the operator to determine the commencement of the distillation and to regulate it. At the same time steam, superheated in the superheater (F), is allowed to enter by the three-way tap (G) and a distributing ring at the top of the filter. The temperature of the steam entering the charcoal is recorded by the thermometer (H). Benzole and steam pass out through the two-way tap (K) and are condensed in the condenser (L). This specially designed condenser is a combination of a double-surface and a spirit condenser, and effects very efficient cooling at comparatively rapid rates of distillation. By its use loss of light spirit is minimized. The other thermometers shown give the temperature of the charcoal bed at two points.

At the completion of a distillation the steam is shut off, and at the same time, by adjustment of the taps (G) and (K), nitrogen is passed through the apparatus to cool and dry the

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charcoal. When cooled the charcoal is again ready for saturation, and gas is allowed to enter at the tap (K), is stripped by the charcoal, and passes out through the tap (G) to a meter.

### Method of Operation.

The samples of benzole were obtained with three of the extraction filters described above. One was used for recovering samples representing an extraction of 1·5 gallons per ton of coal carbonized. The other two formed a pair in series. Through the first apparatus of the two the correct volume of gas was passed to give an extraction of 3 gallons per ton. The benzole escaping from this apparatus, and representing the remainder of the benzole in the gas, was removed by the second apparatus. Conditions were such that this second filter was only about 30 p.ct. saturated at the completion of the gas passage, and by this means the gas was completely stripped, and there was no loss of benzole in the gas leaving the second extractor. A combined sample from the two represented the total benzole in the gas. The filters, which were in continuous operation, were

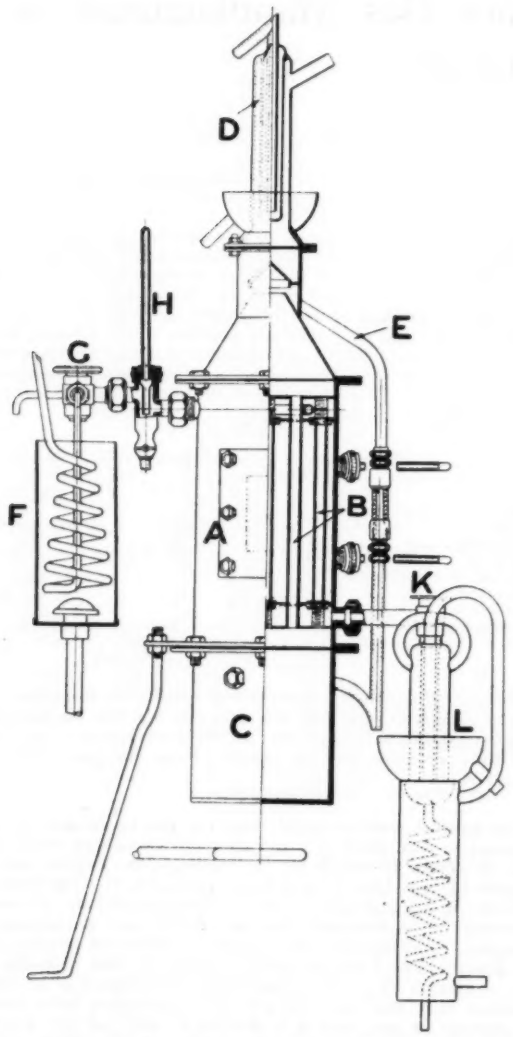


**Fig. 1.—Experimental Charcoal Filter for the Determination and Recovery of the Benzole in Coal Gas.**

distilled off once a day, and the final samples used for analysis represented about 35 extractions, thus giving a benzole representative of the make over a period of some weeks.

The method used in order to compute the required gas volume to give an extraction of a given number of gallons of benzole per ton of coal carbonized was as follows. The benzole capacity of the charcoal in the filter was determined in a series of preliminary experiments, and the approximate number of cubic feet of gas made per ton obtained by averaging the daily retort-house figures for the month preceding the test. From these the approximate gas volume that it is necessary to pass through the charcoal, so that the benzole subsequently recovered shall represent (say) 3 gallons per ton of coal, is obtained by calculation: [capacity of charcoal (gallons)/3 gallons] × gas-make per ton. Practically, there are two varying factors which may cause the deviation of an individual extraction result from the required figure. The first is the fluctation in the gas-make per ton from day to day, and the second is a fluctuation in the benzole capacity of a given quantity of charcoal and due chiefly to a variation in the benzole content of the gas. The effect of the fluctuations in the gas-make was minimized by arranging for saturations to finish half an hour after the calculation of the daily retort house figures. Any correction to the average figure could then be made and the gas volume adjusted accordingly. Variations in the benzole yields were not controllable, but, as will be seen from the figures, the variation was not great. In the case of one or two extractions where, in spite of this precaution, the yield did not approximate reasonably closely to the required figure, the sample was discarded.

It should be pointed out that the quality of the benzole samples was not affected by excessive rate of gas passage. The gas rate in every case was kept to a predetermined figure, and was sufficiently slow to ensure the removal of the benzole until the charcoal became saturated.

The quantity of steam used during carbonization was 6 p.ct. in the case of the Type 2 setting. For the Type 1 setting it is not possible, unfortunately, to give the amount in a comparable form.

### Analytical Results.

The methods of analysis used were those of Spielmann and Wheeler (J.S.C.I., 1916, **35**, 396, 911) and—for paraffins in the toluene fraction—Colman and Yeoman (*ibid.*, 1919, **38**, 57 T). The results obtained are tabulated below.

*Composition and Quantity of the Total Condensable Spirit in the Gas.*

| — | Setting Type 1. | | Setting Type 2. | |
|---|---|---|---|---|
| | P.Ct. | Per Ton of Coal. Gallons. | P.Ct. | Per Ton of Coal. Gallons. |
| Unsaturated compounds— | | | | |
| (*a*) Acid loss | 15·05 | | 16·93 | |
| (*b*) Polymerized | 10·38 } 25·43 | 1·127 | 9·89 } 26·74 | 1·098 |
| Carbon disulphide | 1·17 | 0·052 | 1·24 | 0·052 |
| Paraffins to 150° | 23·69 | 1·050 | 22·63 | 0·903 |
| Benzene | 32·42 | 1·436 | 35·87 | 1·446 |
| Toluene | 9·46 | 0·419 | 8·02 | 0·326 |
| Xylenes to 150° | 3·90 | 0·173 | 2·46 | 0·102 |
| Residue | 3·93 | 0·174 | 3·04 | 0·126 |
| | 100·00 | 4·431 | 100·00 | 4·053 |

It is apparent from the above analysis that both types of setting give benzole of a similar quality.

*Composition of the Benzoles from Extractions of 3 Gallons and 1·5 Gallons per Ton of Coal Carbonized.*

| — | Setting Type 1. | | | | Setting Type 2. | | | |
|---|---|---|---|---|---|---|---|---|
| | 3 Gallons. | | 1·5 Gallons. | | 3 Gallons. | | 1·5 Gallons. | |
| Unsaturated compounds— | | | | | | | | |
| (*a*) Acid loss | 15·36 | | 16·00 | | 15·20 | | 13·20 | |
| (*b*) Polymerized | 9·20 } | 24·56 | 9·97 } | 25·97 | 8·60 } | 23·80 | 8·88 } | 22·08 |
| Carbon disulphide | 1·24 | | 0·60 | | 0·55 | | 0·45 | |
| Paraffins to 150° | 17·35 | | 18·03 | | 16·31 | | 20·18 | |
| Benzene | 32·05 | | 13·23 | | 40·64 | | 24·63 | |
| Toluene | 13·56 | | 18·54 | | 11·02 | | 18·08 | |
| Xylenes to 150° | 5·56 | | 11·17 | | 3·44 | | 4·97 | |
| Residue | 5·68 | | 12·46 | | 4·24 | | 9·61 | |
| | 100·00 | | 100·00 | | 100·00 | | 100·00 | |

Analyses are given below of the light fraction which escapes during an extraction of 3 gallons per ton. These two results cannot be directly compared since the total quantities of benzole per ton of coal were not the same for the two settings, and they therefore represent different proportions of the total benzoles. They give, however, some idea of the type of spirit which would escape extraction in normal working practice.

| — | Setting Type 1. | | Setting Type 2. | |
|---|---|---|---|---|
| Unsaturated compounds— | | | | |
| (*a*) Acid loss | 14·40 | | 21·30 | |
| (*b*) Polymerized | 12·84 } | 27·24 | 13·13 } | 34·43 |
| Carbon disulphide | 1·03 | | 3·11 | |
| Paraffins | 37·07 | | 38·28 | |
| Benzene | 33·32 | | 23·31 | |
| Toluene | 0·92 | | 0·87 | |
| Xylenes | 0·42 | | *Nil* | |
| Residue over 150° | *Nil* | | *Nil* | |
| | 100·00 | | 100·00 | |

*(To be concluded.)*

# REGISTER OF PATENTS

## Scrubbers.—No. 331,818.

WATSON, S. G., of Surbiton, and HENSHAW, D. M., and W. C. HOLMES & Co., LTD. of Huddersfield.

No. 10,357; April 3, 1929.

This invention relates to apparatus for bringing liquids and gases into intimate contact. The object is to provide an improved form of apparatus of the kind in which elements in the form of stationary brushes are employed. In one construction the chamber is divided by partition members into a plurality of communicating compartments, in each of which brush-carrying members are arranged. Communication between the adjacent compartments may be effected in any convenient manner adapted to secure that the gas or vapour will travel through the several compartments in succession, and preferably the communication between the compartments is so arranged as to provide an extended path for the travel of the gas. Thus, for example, a device in accordance with the invention may comprise a chamber rectangular in longitudinal and transverse section, divided into a plurality of compartments by partition members in which are arranged, alternately, openings adjacent to the top of the chamber, and openings adjacent to the base of the chamber, so that in travelling through the several compartments the gas will alternately pass in an upward and in a downward direction. In each of the compartments, plates to which brushes may be removably secured are arranged. For distributing the liquid within the vessel any suitable means may be employed.

## Transporting Systems. No. 331,955.

HUMPHREYS & GLASGOW, LTD., of Victoria Street, Westminster, and FRYER, J. E. G., of South Woodford.

No. 12,587; April 23, 1929.

This invention has reference to apparatus for raising and transporting loads of the kind in which a truck or like load carrier is operated by means of a winch and hauling rope, the object being to provide a convenient and easily operated arrangement whereby the raised truck can be transported along a horizontal track.

Means are provided whereby the speed at which the rope is wound up is reduced when the load reaches the horizontal track. In one arrangement the winch barrel or drum is of different diameters, the larger diameter corresponding to the length of rope required to lift the truck, and the smaller diameter to that required to transport it horizontally, by which arrangement the speed at which the rope is wound up will not become excessive as soon as the load is supported on the horizontal track. In another arrangement the winch motor is trip-switched to run at two different and suitable speeds. To prevent the rope slackening when the truck is on the horizontal track there is mounted thereon a travelling carriage which is adapted to be engaged by the truck on its reaching the horizontal track, and thus to be carried along the track in opposition to a balance weight connected to the carriage by a rope. The arrangement is such that the balance weight will return the truck along the horizontal track when the winch barrel or drum is released, the travelling carriage being prevented from leaving the horizontal track and following the truck or carrier on its downward path by a stop.

## Cookers.—No. 332,069.

PETERSON, S. W., of Gävle.

No. 22,985; July 26, 1929.

The patentee of this invention claims a gas cooking stove with an entirely or partially closed combustion chamber beneath the hotplate, characterized by the feature that burners, pipes, and cocks are lodged within the combustion chamber itself in such a manner that the hotplate is quite free from such members, and is movable about a hinge.

## Effecting Contact Between Gases and Divided Solids.—No. 315,868.

HUMPHREYS & GLASGOW, LTD., of Victoria Street, Westminster (Assignees of BRADY, E. J., of Philadelphia).

No. 21,275; July 10, 1929. Convention date, July 21, 1928.

This invention relates to the effecting of contact between gases and divided solids. The object is to provide improved apparatus for effecting such contact. The patentees observe that there is a great variety of processes in which contact is brought about between gases and divided solids in order to effect chemical or physical changes in them. This apparatus is adapted for use in a great many of these processes, such as the purification of gases from hydrogen sulphide by contact with divided iron oxide, the total purification of gases from sulphur by contact with hot iron oxide, the revivification of fouled iron oxide by contact with air, the dehydration of gases by contact with calcium chloride, activated carbon, or other dehydrating agent, the debenzolizing of gas and the removal of gums and gum-forming constituents from gas by contact with solid absorbents, and the drying of coal or other material by contact with hot products of combustion.

The invention relates to apparatus of the kind in which the divided solids are caused to descend continuously or intermittently between perforated walls which are moved relatively to each other, and the gases are caused to pass through the perforated walls and transversely through the divided solids between them. According to the present invention, apparatus is so constructed that the gases are caused to pass back and forth across the divided solids between the walls and in a general counterflow direction. The apparatus is capable of many modifications as to form of the perforated walls and as to the particular means selected to move one wall with respect to the other or to introduce or withdraw the solid from the space between the walls.

The specification is illustrated by eight diagrams to show several arrangements of the apparatus.

## Gas-Fired Furnaces.—No. 331,635.

WELLMAN SMITH OWEN ENGINEERING CORPORATION, LTD., and SOWARD, H. W., both of Victoria Street, Westminster.

No. 14,500; May 9, 1929.

This invention relates to furnaces for use in the heat treatment of metals.

A gas fired furnace in accordance with this invention comprises a furnace chamber proper having separate and independently controlled gas and air inlets, the air inlets consisting of a plurality of comparatively small holes formed in the crown of the furnace chamber proper, so that the air enters at a large number of jets; and air heating means consisting of passages for products of combustion and air arranged the one above the other or side by side, constituted in a structure that forms part of the roof of the furnace chamber proper. The crown of the latter is hollow, to constitute an air space which is in communication with the furnace chamber through a large number of small holes, so that the air issuing from the holes forms jets. The gas is introduced into the furnace chamber through openings independent of the air inlets, and is separately controlled.

## Gas-Fired Incinerators.—No. 332,720.

ROBINSON, J. C., and JAMES SLATER & Co. (ENGINEERS), LTD., both of Oxford Street, London, W. 1.

No. 20,438; July 3, 1929.

The following claims are made for this invention, which is primarily intended for service in hospitals, infirmaries, and similar institutions.

1. A gas heated incinerator wherein the combustion chamber is formed with double walls, the space between these walls constituting a passage of air to the combustion chamber.

2. A gas heated incinerator as claimed in Claim 1, wherein the gas burners are arranged so as to project flames in two parallel rows, one above and one below the receptacle provided for the reception of the articles to be destroyed.

3. A gas heated incinerator as claimed in Claim 1 or Claim 2 wherein a gas control valve is provided having means whereby the supply of gas to the burners of the incinerator is automatically cut off or reduced to a minimum after a predetermined interval of time.

## Applications for Patents.

**[Extracted from the "Official Journal" for Aug. 13.]**

Nos. 23,369—23,925.

DEHN, F. B. (GAS MACHINERY COMPANY).—"Apparatus for manufacturing water gas." No. 23,856.

GAS LIGHT AND COKE COMPANY.—"Flue dampers." No. 23,469.

GAS LIGHT AND COKE COMPANY.—"Heating apparatus." No. 23,582.

GAS LIGHT AND COKE COMPANY.—"Refrigerating apparatus." No. 23,583.

LEWIS, G. M.—"Gas-fired water heater." No. 23,376.

MARSH, R. G.—See Lewis, G. M. No. 23,376.

MASTERMAN, C. A.—See Gas Light and Coke Company. Nos. 23,582, 23,583.

ROGERS, R. J.—See Lewis, G. M. No. 23,376.

TURNER, G. A.—See Gas Light and Coke Company. No. 23,583.

**[Extracted from the "Official Journal" for Aug. 20.]**

Nos. 23,926—24,618.

ALLGEMEINE ELEKTRICITATS-GES.—"Dry gas meters." No. 24,064.

ASHWORTH, R.—"Device for automatically controlling calorific value of gas." No. 24,139.

HUBMANN, O.—"Low-temperature carbonization of small fuel." No. 24,143.

HUMPHREYS & GLASGOW, LTD.—"Mechanically clinkered gas generators." No. 24,133.

METALLGES. AKT.-GES.—See Hubmann, O. No. 24,143.

MORRIS, G. R.—"Taps for gas." No. 24,215.

TILDESLEY, W. R. D.—See Ashworth, R. No. 24,139.

# GAS MARKETS & MANUFACTURES

## Stock Market Report.

**[For Stock and Share List, see later page.]**

There was no improvement last week in the general depression which has been prevalent in most sections of the Stock Exchange for some time past. The only bright spot was the gilt-edged department, which, assisted by the prospect of a prolonged spell of cheap money, continued to flourish, and British Funds made further progress.

Business in the Gas Section was normal for the time of year, and prices continued steady. Debentures were in demand, and several stocks showed gains—viz., British 5 p.ct. redeemable (1951), a further 2 points to 94½; Gas Light and Coke 5 p.ct. redeemable (1952/57), 1 point to 99½; Tottenham 4 p.ct., 2 to 76½; and Wandsworth 5 p.ct., 1 to 97½. Among ordinary stocks, Croydon sliding-scale closed a point higher at 105½ and Bournemouth 5 p.ct. ordinary and 6 p.ct. preference showed fractional increases. On the other hand, Gas Light and Coke £1 units registered a slight fall of 1½d. to 19s. 1½d., European ordinary 3 points to 107, and Imperial Continental eased 5 points to 355.

The attention of intending investors is drawn to the ordinary stock of the Tottenham District Gas Company, several parcels of which changed hands last week at prices ranging from 103½ to 104½. The Company is in a strong financial position, and is carrying out a very progressive policy. Recent dividends of the "B" ordinary stock, which is comparable to the existing ordinary stock, were for 1926, £6 2s. 6d.; 1927, £6 3s. 9d.; 1928, £6 11s. 3d.; and on the ordinary stock for 1929, £6 12s. 6d. On the basis of the latter distribution at the current market price of 104, the yield is £6 7s. 4d. p.ct. The stock changed hands last year at 108.

Among the interim dividend announcements last week on ordinary capitals were the following: Hornsey 3½ p.ct., 3; 5 p.ct., 3⅜; North Middlesex, 3⅜; South Shields, 4½; Uxbridge, 3½. The same rates in each case were paid for the corresponding period last year.

## Coal Markets.

Business in all the markets remains stagnant, and there is very little doing either on prompt or on forward account. Attention is being concentrated on the preparation of the district selling schemes, and little change in the situation is anticipated until more is known of their likely effect. While there is no great pressure to deal, buyers generally, especially for export, would probably pay something above current rates for next year's contracts, but colliery ideas are more optimistic than those of the consumers, and very little business is passing.

There is, if anything, a slightly better tone on the Newcastle market, but it hardly extends to the gas coal section, in which indications are very disappointing for the time of year. Quotations are being held, but curtailment of production, especially among second-class coals, is widespread. Wear specials quote about 15s. 3d. f.o.b., best qualities 14s. 6d. to 14s. 9d., and seconds and other 12s. 9d. to 13s. 3d. The Yorkshire export prices for screened gas is 15s. to 16s. f.o.b.

Gas coke is the strongest feature, and is in good demand for both prompt and forward at round 21s. 6d.

## Contracts Advertised To-Day.

**Coal.**

The Sidmouth Gas Department. [Advert. on p. 486.]
The Bingley Gas Department. [Advert. on p. 486.]
The Dewsbury Gas Department. [Advert. on p. 486.]

**Gasholders.**

The City of Lincoln Gas Department invite tenders for a 1½ million c.ft. gasholder. [Advert. on p. 488.]

**Main Extensions.**

Tenders are invited by the Borough of Workington Gas Department for extensions to their mains. [Advert. on p. 486.]

## Trade Notes.

**Paint Spraying: Similarity of Name.**

The Aerograph Company, Ltd., of 43, Holborn Viaduct, E.C. 1, who were the inventors and pioneers of spray painting, have asked us to state that they have no connection whatsoever with the Aerograph Spraying Company, of 19, Sturt Street, Shepherdess Walk, London, against whom a bankruptcy petition has been filed. The Aerograph Company, Ltd., also ask us to point out that the word "Aerograph" is their registered trade mark, and that they will take proceedings immediately against any person or firm who infringes that trade mark. The Aerograph Company had already instituted proceedings against the Aerograph Spraying Company in respect of the infringement of the "Aerograph" trade mark, and they were given to understand that the Aerograph Spraying Company acknowledged the infringement, and had, therefore, decided to change the name of their Company.

## Current Sales of Gas Products.

**The London Market for Tar, Tar Products, and Sulphate.**

LONDON, *Aug. 25.*

The market for tar products is very quiet at present, and prices quoted are unchanged.

Pitch is 47s. 6d. per ton f.o.b., and creosote for the United States 6d. to 6¼d. per gallon f.o.b.

White spirits remain steady; pure toluole being 2s. 2d. to 2s. 3d. per gallon; pure benzole, 1s. 10d. to 1s. 11d. per gallon; and 90/160 solvent naphtha, 1s. 5d. to 1s. 6d. per gallon.

Pyridine bases are about 3s. 9d. per gallon. All prices are *ex* sellers' works.

**Tar Products in the Provinces.**

*Aug. 25.*

The average prices of gas-works products during the week were: Gas-works tar, 20s. to 24s. Pitch—East Coast, 46s. f.o.b. West Coast, Manchester, Liverpool, Clyde, 46s. f.o.b.* Toluole, naked, North, 1s. 7¾d. to 1s. 8¼d. Coal-tar crude naphtha, in bulk, North, 9d. to 10d. Solvent naphtha, naked, North, 1s. 3d. to 1s. 3½d. Heavy naphtha, North, 11d. to 1s. Creosote, in bulk, North, liquid and salty, 3¼d. to 3⅜d.; low gravity, 1¼d.; Scotland, 3¼d. to 3⅜d. Heavy oils, in bulk, North, 5½d. to 6d. Carbolic acid, 60's, 1s. 11d. to 2s. July/December. Naphthalene, £10 to £12. Salts, £3 to £5, bags included. Anthracene, "A" quality, 2½d. per minimum, 40 p.ct., purely nominal; "B" quality, unsaleable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port, it will be necessary to deduct the loading costs and the tolls whatever they may be.

**Tar Products in Scotland.**

GLASGOW, *Aug. 23.*

Trading continues on a small scale in this area and quotations for most items are easy. Motor benzole has been changing hands during the week at current price.

Pitch.—The Continental demand is not yet forthcoming, and quotations remain nominal at 45s. to 47s. 6d. per ton f.o.b. Glasgow for export and about 45s. per ton *ex* works for home trade.

Refined tar to Ministry of Transport Specification shows no improvement despite the lower prices now being quoted. The value remains at 3d. to 3½d. per gallon f.o.r. makers' works in buyers' packages.

Creosote.—Timber-preserving grades remain inactive, and value is lower. B.E.S.A. Specification is 2¾d. to 3¼d. per gallon; low gravity, 3d. to 3½d. per gallon; and neutral oil, 3d. to 3½d. per gallon; all *ex* makers' works in bulk.

Cresylic is unchanged, there being very few orders passing. Pale 97/99 p.ct. is 1s. 7d. to 1s. 8d. per gallon; dark 97/99 p.ct., 1s. 6d. to 1s. 7d. per gallon; and pale 99/100 p.ct., 1s. 9d. to 1s. 10d. per gallon—all in buyers' packages at makers' works.

Crude naphtha.—Quotations are steady at 4¼d. to 4¾d. per gallon in bulk quantities f.o.r. works.

Solvent naphtha is in limited demand. 90/160 is about 1s. 2½d. to 1s. 3½d. per gallon, and 90/190, 1s. to 1s. 1d. per gallon f.o.r. makers' works.

Motor benzole.—Some activity is noticeable, and value is steady at 1s. 5¾d. to 1s. 6¼d. per gallon.

Pyridines are dull. 90/160 grade is nominal at 3s. to 3s. 3d. per gallon *ex* works.

**The following are considered to be the market prices at the present time:**

| | s. d. | s. d. | |
|---|---|---|---|
| Crude benzole . . . | 0 10 to | 0 11 | per gallon at works |
| Motor ,, . . . | 1 5½ ,, | 1 6½ ,, | ,, ,, |
| Pure ,, . . . | 1 10 ,, | 1 11 ,, | ,, ,, |

## Gas Acts (1920 and 1929) Orders.

**SPECIAL ORDERS.**

**Chertsey Gas Consumers' Company, Ltd.**

To empower the Company to raise additional capital and to provide standard rates of dividend.

**Northampton Gaslight Company.**

To transfer to the Company the undertaking of the Towcester Gas and Coke Company, Ltd., to extend the limits of supply, and to raise additional capital.

# STOCK AND SHARE LIST.

[For Stock Market Report, see earlier pages.]

| Issue. | Share. | When ex-Dividend. | Dividends. Prev. Hf. Yr. | Dividends. Last Hf. Yr. | NAME. | Quotations. Aug. 22. | Rise or Fall on Week. | Transact'ns Lowest and Highest Prices During the Week. |
|---|---|---|---|---|---|---|---|---|
| £ | | | % p.a. | % p.a. | | | | |
| 171,978 | Stk. | Aug. 14 | 5 | 5 | Aldershot 5 p.c. max. C. | 73—78* | .. | 76 |
| 522,992 | ,, | ,, | 4 | 4 | Do. 4 p.c. Pref. | 68—71* | .. | .. |
| 1,551,868 | ,, | Apl. 3 | 7⅞ | 7⅞ | Alliance & Dublin Ord. | 92—95 | .. | 94¼—94¼ |
| 374,000 | ,, | July 10 | 4 | 4 | Do. 4 p.c. Deb. | 60—63 | .. | 61 |
| 522,655 | ,, | Mar. 6 | 7 | 7 | Barnet Ord. 7 p.c. | 109—112 | .. | .. |
| 300,000 | 1 | Apl. 24 | 1/4⅛ | 1/7⅛ | Bombay, Ltd. | 16/—18/- | .. | .. |
| 174,500 | 10 | Aug. 14 | 9 | 9 | Bournemouth 5 p.c. | 14—15* | +¼ | .. |
| 500,050 | 10 | ,, | 7 | 7 | Do. B 7 p.c. | 12—12½* | .. | .. |
| 439,160 | 10 | ,, | 6 | 6 | Do. Pref. 6 p.c. | 10¾—11¼* | +¼ | 10¾—11 |
| 50,000 | Stk. | June 26 | 3 | 3 | Do. 3 p.c. Deb. | 54—57 | .. | .. |
| 162,025 | ,, | ,, | 4 | 4 | Do. 4 p.c. Deb. | 74—76 | .. | .. |
| 357,900 | ,, | Mar. 20 | 7½ | 7½ | Brighton & Hove 6 p.c. Con. | 115—120 | .. | 118 |
| 871,880 | ,, | ,, | 6⅔ | 6⅔ | Do. 5 p.c. Con. | 102—105 | .. | .. |
| 1,287,590 | ,, | July 24 | 5 | 5 | Bristol 5 p.c. max. | 88—89a | .. | .. |
| 855,000 | ,, | Apl. 3 | 7 | 8 | British Ord. | 110—115 | .. | 112 |
| 100,000 | ,, | June 26 | 7 | 7 | Do. 7 p.c. Pref. | 112—117 | .. | .. |
| 120,000 | ,, | ,, | 4 | 4 | Do. 4 p.c. Red. Deb. | 70—73 | .. | .. |
| 450,000 | ,, | ,, | 5 | 5 | Do. 5 p.c. Red. Deb. | 93—96 | +2 | .. |
| 100,000 | ,, | June 26 | 5 | 5 | Cambridge 5 p.c. Deb. | 93—96 | .. | .. |
| 100,000 | 10 | May 22 | 6 | 10 | Cape Town, Ltd. | 9—10 | .. | .. |
| 100,000 | 10 | Apl. 24 | 4½ | 4½ | Do. 4½ p.c. Pref. | 6½—7½ | .. | .. |
| 150,000 | Stk. | June 26 | 4½ | 4½ | Do. 4½ p.c. Deb. | 69—74 | .. | .. |
| 626,860 | ,, | July 24 | 6 | 6 | Cardiff Con. Ord. | 94—97 | .. | .. |
| 287,860 | ,, | June 26 | 7½ | 7½ | Do. 7½ p.c. Red. Deb. | 97—100 | .. | .. |
| 157,150 | ,, | Aug. 14 | 6¾ | 5 | Chester 5 p.c. Ord. | 86—91b* | .. | .. |
| 98,936 | 1 | May 8 | †2/- | †2/- | Colombo, Ltd. Ord. | 33/—35/- | .. | .. |
| 24,500 | 1 | ,, | 1/4½ | 1/4½ | Do. 7 p.c. Pref. | 18/6—20/6 | .. | .. |
| 609,204 | 1 | Apl. 3 | 1/9⅜ | 1/9⅜ | Colonial Gas Assn. Ld. Ord | 17/—19/- | .. | .. |
| 296,053 | 1 | ,, | 1/7⅛ | 1/7⅛ | Do. 8 p.c. Pref. | 19/—21/- | .. | .. |
| 2,073,280 | Stk. | July 24 | 7 | 6 | Commercial Ord. | 94—97 | .. | 95 |
| 475,000 | ,, | June 26 | 3 | 3 | Do. 3 p.c. Deb. | 56—59 | .. | 57½ |
| 787,560 | ,, | Aug. 14 | 7 | 7 | Croydon sliding scale | 104—107 | +1 | 105—107 |
| 453,100 | ,, | ,, | 5 | 5 | Do. max. div. | 81—84* | .. | 82½—83 |
| 542,270 | ,, | Aug. 14 | 10 | 7 | Derby Con. | 115—125e* | .. | .. |
| 55,000 | ,, | June 26 | 4 | 4 | Do. Deb. | 65—70e | .. | .. |
| 209,000 | ,, | Mar. 6 | 5 | 5 | East Hull Ord. 5 p.c. | 71—73 | .. | .. |
| 1,002,180 | ,, | Mar. 20 | †4g | †7g | European, Ltd. | 102—112 | —3 | 105—107 |
| 18,629,125 | ,, | July 24 | 5⅜ | 5⅜ | Gas Light & Coke 4 p.c. Ord. | 18/10½—19/4½f | —/1½ | 18/10½—19/4½ |
| 2,600,000 | ,, | ,, | 3½ | 3½ | Do. 3½ p.c. max. | 62—64 | .. | 63—63½ |
| 4,157,020 | ,, | ,, | 4 | 4 | Do. 4 p.c. Con. Pref. | 77—80 | .. | 79—79½ |
| 5,602,620 | ,, | June 26 | 3 | 3 | Do. 3 p.c. Con. Deb. | 58—61 | .. | 60—61 |
| 3,642,770 | ,, | ,, | 5 | 5 | Do. 5 p.c. Red. Deb. | 98—101 | +1 | 99½—100½ |
| 161,480 | ,, | Feb. 20 | 10 | 10 | Harrogate Cons. 10 p.c. max. | 158—163 | .. | .. |
| 82,500 | ,, | Mar. 20 | 7 | 7 | Hastings & St. L. 5 p.c. Conv. | 99—104 | .. | .. |
| 258,740 | ,, | ,, | 5½ | 5½ | Do. 3½ p.c. Conv. | 78—83 | .. | .. |
| 70,000 | 10 | May 22 | †10 | ⅓ | Hongkong & China, Ltd. | 13½—14½ | .. | .. |
| 213,200 | Stk. | Aug. 14 | 6 | 6 | Hornsey Con. 3½ p.c. | 88—91* | .. | .. |
| 2,436,594 | ,, | May 22 | 10 | 25 | Imperial Continental Cap. | 845—865 | —5 | 845—857 |
| 229,180 | ,, | Aug. 14 | 3½ | 3½ | Do. 3½ p.c. Red. Deb. | 60—85* | .. | .. |
| 235,242 | ,, | Aug. 14 | 8½ | 8½ | Lea Bridge 5 p.c. Ord. | 123—128* | .. | .. |
| 2,145,907 | ,, | Aug. 14 | 6 | 6 | Liverpool 5 p.c. Ord. | 90½—91½b* | .. | .. |
| 600,000 | ,, | Mar. 20 | 7 | 7 | Do. 7 p.c. Red. Pref. | 100—102b | .. | .. |
| 165,736 | ,, | Feb. 20 | 9 | 8 | Maidstone 5 p.c. Cap. | 123—128 | .. | .. |
| 63,480 | ,, | June 26 | 3 | 3 | Do. 3 p.c. Deb. | 51—54 | .. | .. |
| 75,000 | 5 | June 26 | †10 | †10 | Malta & Mediterranean | 5¼—6 | .. | .. |
| 392,000 | — | Apl. 1 | 5½ | 5½ | Metrop'itan (of Melbourne) 5½ p.c. Red. Deb. | 90—93 | .. | .. |
| 541,920 | Stk. | May 22 | †6 | †8 | Montevideo, Ltd. | 105—110 | .. | 107½—108½ |
| 2,061,315 | ,, | July 24 | 5⅜ | 5 | Newcastle & Gateshead Con. | 15/9—16/3d/ | .. | .. |
| 682,856 | ,, | ,, | 4 | 4 | Do. 4 p.c. Pref. | 70½—71½d | .. | .. |
| 691,705 | ,, | June 26 | 3½ | 3½ | Do. 3½ p.c. Deb. | 66⅔—67⅔d | .. | .. |
| 169,940 | ,, | Mar. 6 | 7½ | 7½ | North Middlesex 6 p.c. Con. | 109—114 | .. | .. |
| 396,160 | ,, | Aug. 14 | 5 | 5 | Northampton 5 p.c. max. | 76—81* | .. | .. |
| 300,000 | ,, | Apl. 24 | 9 | 7 | Oriental, Ltd. | 108—113 | .. | .. |
| 60,000 | 5 | 13 My., '15 | — | — | Ottoman | 0—¼ | .. | .. |
| 205,162 | Stk. | June 26 | 8 | 8 | Plym'th & Stonehouse 5 p.c. | 105 108 | .. | .. |
| 424,416 | ,, | Feb. 20 | 8 | 8 | Portsm'th Con. Stk. 4 p.c. Std | 110—115 | .. | .. |
| 241,446 | ,, | ,, | 5 | 5 | Do. 5 p.c. max. | 78—81 | .. | .. |
| 186,000 | 100 | June 2 | 4 | 4 | Primitiva 4 p.c. Red. Deb. | 96—99 | .. | .. |
| 677,837 | Stk. | July 24 | 4 | 4 | Do. 4 p.c. Red. Deb. 1911 | 79—82 | .. | .. |
| 371,496 | ,, | June 26 | 4 | 4 | Do. 4 p.c. Cons. Deb. | 81—84 | .. | .. |
| 150,000 | 10 | Apl. 3 | 6 | 6 | San Paulo 6 p.c. Pref. | 8½—9 | .. | .. |
| 1,736,968 | Stk. | Mar. 20 | 6½ | 6½ | Sheffield Cons. | 103—105e | .. | .. |
| 95,000 | ,, | July 10 | 4 | 4 | Do. 4 p.c. Deb. | 76—78e | .. | .. |
| 90,000 | 10 | June 5 | ‡4 | ‡5 | South African | 4—6 | .. | .. |
| 6,709,895 | Stk. | Aug. 14 | 7½ | 5 | South Met. Ord. | 101—103* | .. | 101½—102½ |
| 500,000 | ,, | ,, | 6 | 6 | Do. 6 p.c. Irred. Pf. | 107—110* | .. | .. |
| 1,895,445 | ,, | July 10 | 3 | 3 | Do. 3 p.c. Deb. | 57—60 | .. | 60 |
| 734,000 | ,, | Mar. 6 | 6½ | 6½ | Do. 6½ p.c. Red. Db. | 99—101 | .. | .. |
| 91,500 | ,, | Aug. 14 | 8½ | 8½ | South Shields Con. | 103—104d* | .. | .. |
| 1,543,795 | ,, | July 24 | 6½ | 6½ | South Suburban Ord. 5 p.c. | 100—103 | .. | .. |
| 468,827 | ,, | June 26 | 5 | 5 | Do. 5 p.c. Deb. | 93—96 | .. | .. |
| 647,740 | ,, | Feb. 20 | 5 | 5 | Southampton Ord. 5 p.c. max. | 76—79 | .. | .. |
| 121,275 | ,, | June 26 | 4 | 4 | Do. 4 p.c. Deb. | 71—74 | .. | .. |
| 179,014 | ,, | July 24 | 8 | 8 | Sutton Ord. | 110—113 | .. | .. |
| 67,828 | ,, | June 26 | 5 | 5 | Do. 5 p.c. Deb. | 93—96 | .. | .. |
| 250,000 | ,, | Mar. 6 | 7 | 7 | Swansea 7 p.c. Red. Pref. | 98—101 | .. | .. |
| 200,000 | ,, | June 26 | 6½ | 6½ | Do. 6½ p.c. Red. Deb. | 98—101 | .. | .. |
| 1,076,490 | ,, | July 24 | 6⅝ | 6⅝ | Tottenham District Ord. | 104—106 | .. | 103½—104½ |
| 150,000 | ,, | ,, | 5½ | 5½ | Do. 5½ p.c. Pref. | 95—98 | .. | .. |
| 199,005 | ,, | June 26 | 4 | 4 | Do. 4 p.c. Deb. | 75—78 | +2 | .. |
| 182,380 | 10 | 30 Dec., '12 | — | — | Tuscan, Ltd. | 3⅞—4⅜ | .. | .. |
| 85,701 | Stk. | Mar. 20 | 6 | 6 | Do. 6 p.c. Red. Deb. | 78—80 | .. | .. |
| 309,094 | ,, | Mar. 6 | 7 | 7 | Uxbridge, Maidenhead, & Wycombe 5 p.c. | 94—99 | .. | .. |
| 88,330 | ,, | ,, | 5 | 5 | Do. 5 p.c. pref. | 85—90 | .. | .. |
| 1,180,970 | ,, | July 10 | — | 7 | Wandsworth, Wimbledon, and Epsom Cons. | 107—112 | .. | 109¾—110½ |
| 200,000 | ,, | ,, | 5 | 5 | Do. 5 p.c. Pref. | 87—90 | .. | .. |
| 488,344 | ,, | June 26 | 5 | 5 | Do. 5 p.c. Deb. | 96—99 | +1 | 98 |

Quotations at:—a.—Bristol. b.—Liverpool. c.—Nottingham. d.—Newcastle. e.—Sheffield. f.—The quotation is per £1 of Stock. g.—Paid on £10 shares. * Ex. div. † Paid free of income-tax. ‡ For year. § Div=10 p.ct. p.a. less tax and less tax on interim dividend.

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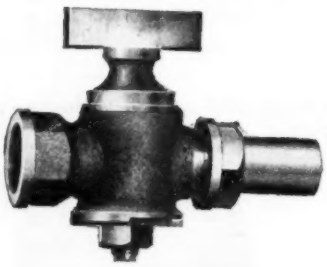

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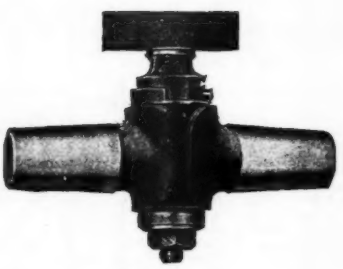
FOR

# MAIN TAPS



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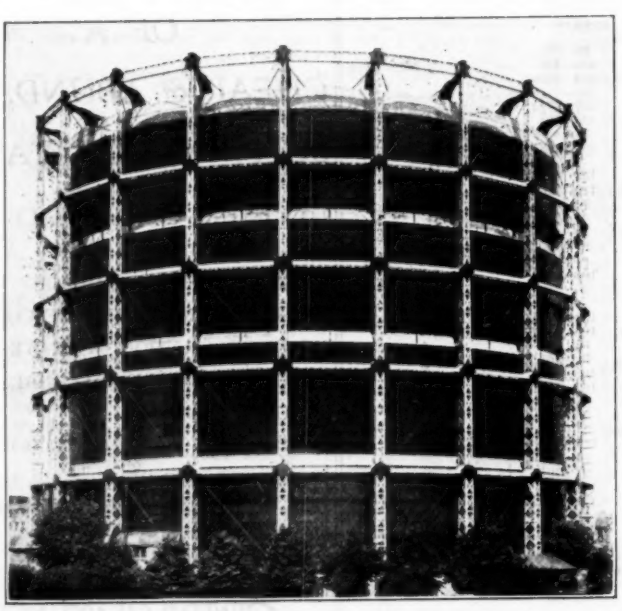

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*(See page advert., Centre p. XI., June 11.)*

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*(See illustrated advt. July 23, p. 186.)*

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**Meters.**—Two Rectangular Station Meters fitted with New Drums, 15,000 c.ft. per hour capacity. Cylindrical Station Meters, 15,000, 10,000, 4000, 3600, and 2000 c.ft. capacity.
**Station Governors.**—Parkinson, Cowan, Braddocks, and Peebles, 4 in., 6 in., 8 in.
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## CONTRACTS OPEN.

### BOROUGH OF WORKINGTON.
(GAS DEPARTMENT.)

EXTENSIONS TO GAS MAINS.

**THE Gas Committee invite Tenders** for the carrying out of the Work in connection with the following EXTENSIONS to District Mains, including the Supply and Delivery of all necessary Materials of British Manufacture, and the Excavation, Laying, and Jointing of the Mains.

(*a*) High-Pressure Scheme for the Supply of Gas to the Parish of Seaton, including Steel Mains with Welded Joints, District and Service Governors.
(*b*) Low-Pressure Scheme for the Supply of Gas to the Parish of Stainburn, including Cast-Iron Spigot and Socket Mains and Specials with Lead Caulked Joints.

Particulars, Plans, and Specifications may be obtained on application to Mr. Hedley Hoy, M.Inst.Gas E., Engineer and Manager, Gas-Works, Stanley Street, Workington.
The Contractors will have to comply with the Conditions laid down by the Unemployment Grants Committee in respect of Unemployment Relief Works.
Sealed Tenders, endorsed "Extensions to Gas Mains," to be delivered to the undersigned not later than Monday noon, the 8th of September, 1930.
The Committee do not bind themselves to accept the lowest or any Tender.
THOMAS JACKSON,
Town Clerk.
Town Hall,
Workington,
Aug. 20, 1930.

### BINGLEY URBAN DISTRICT COUNCIL.
(GAS DEPARTMENT.)

**TENDERS are invited for the Supply** and Delivery of approximately 11,000 Tons of GAS COAL, to be delivered from Oct. 1, 1930, to Sept. 30, 1931.
Forms of Tender and full Particulars to be obtained from the undersigned.
J. B. BALMFORTH,
Engineer and Manager.
Gas-Works,
Bingley.

### COUNTY BOROUGH OF DEWSBURY.
(GAS DEPARTMENT.)

**TENDERS are invited for the Supply** and Delivery by rail at the Corporation Gas Works Sidings, L.M.S. Railway (L. & Y. Section), Dewsbury, or by road, at the Gas-Works, of 18,000 Tons of GAS COAL and SLACKS, during the year ending Oct. 31, 1931.
Further particulars and Forms of Tender may be obtained from Mr. H. L. Bateman, Engineer and Manager, Gas-Works, Savile Town, Dewsbury.
Sealed Tenders, on the prescribed Forms, endorsed "Tenders for Coal," must be delivered at my office not later than the 4th of September, 1930.
The Corporation do not bind themselves to accept the lowest or any Tender.
H. BOOTH,
Town Clerk.
Town Hall,
Dewsbury,
Aug. 22, 1930.

### SIDMOUTH URBAN DISTRICT COUNCIL.
(GAS DEPARTMENT.)

**TENDERS are invited for the Supply** of 3000 Tons of YORKSHIRE GAS COAL, to be delivered over a period of Twelve Months.
Particulars can be obtained from the undersigned.
Sealed Tenders to be received not later than the 11th of September.
HY. BURGESS,
Engineer and Manager.
Gas-Works,
Sidmouth,
August, 1930.

(*Continued on p. 488.*)

# High Capacity Dry Meters

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Diaphragms of improved construction
Stronger fittings
Plate glass covering dial
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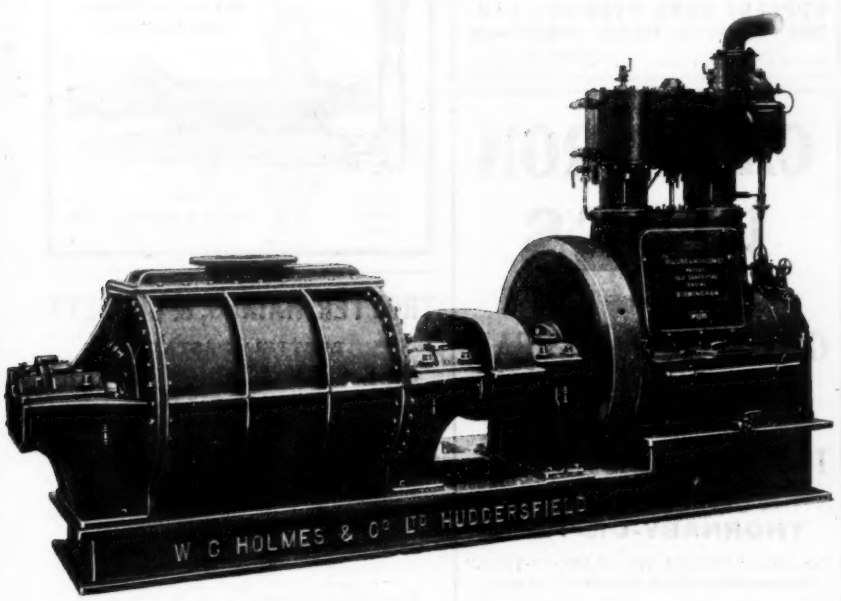


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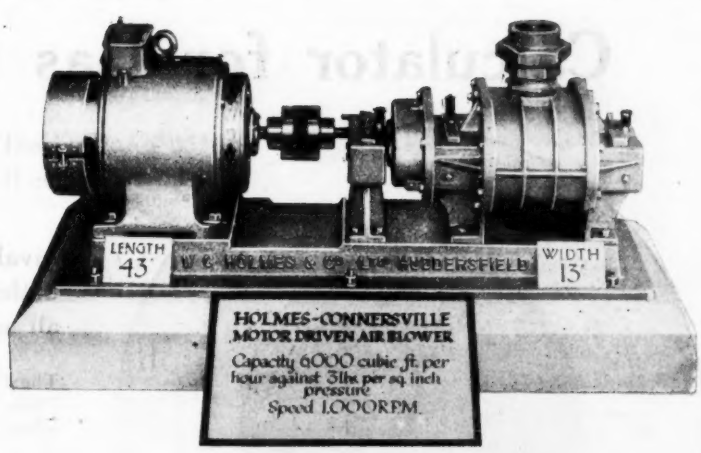
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## CONTRACTS OPEN.—*Continued.*

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3. DRY (KLONNE).
4. FOUNDATIONS for above.
5. 24 in. INLET and OUTLET MAINS, together with Bends, Tees, and Syphons for Connecting from New Site to present Works.

Plan and Specification, full particulars and Conditions of Contract can be obtained from the undersigned.

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The Corporation do not limit themselves to accept the lowest or any Tender.

GEO. WRIGHT, A.M.I.M.E.,
City Gas Engineer and Manager.

Gas Offices,
Silver Street,
Lincoln,
Aug. 16, 1930.

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**CLASS A**
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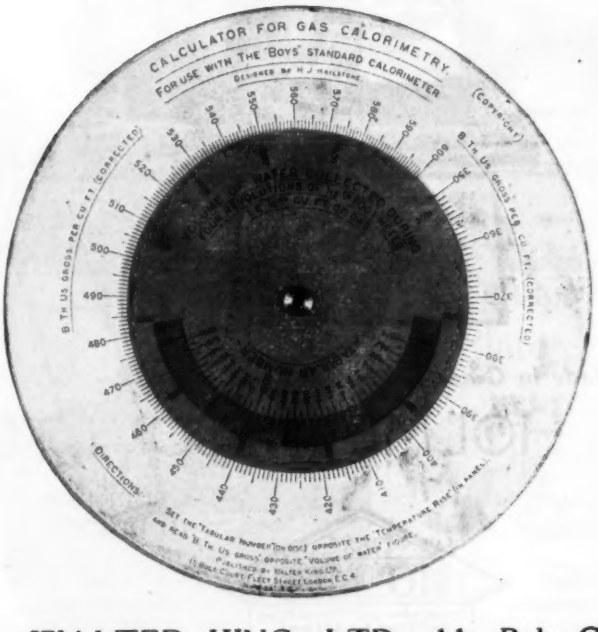
CALCULATOR FOR GAS CALORIMETRY
FOR USE WITH THE 'BOYS' STANDARD CALORIMETER
DESIGNED BY H. J. HAILSTONE
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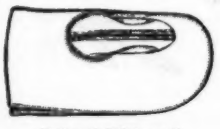

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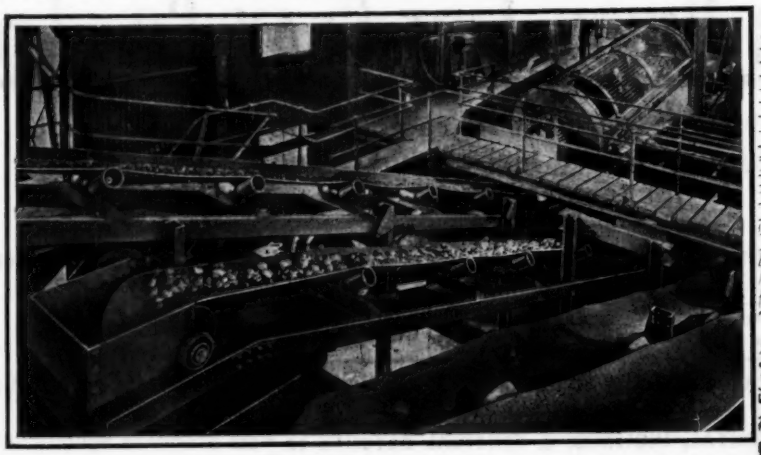

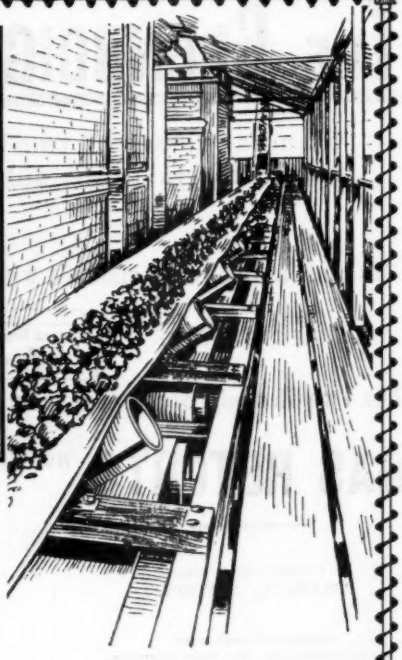

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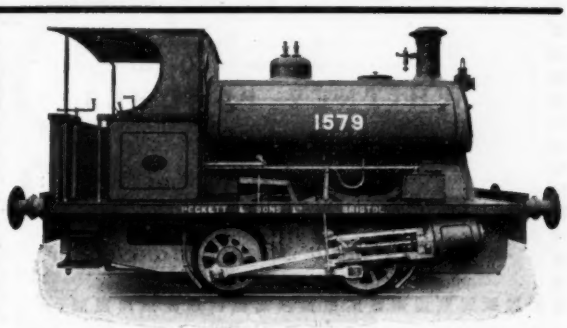


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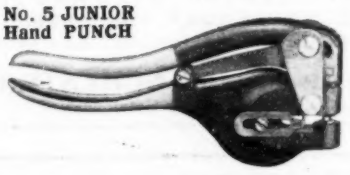

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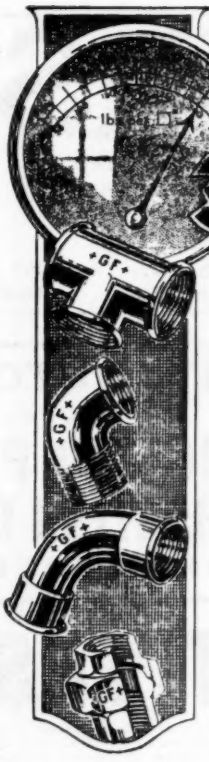

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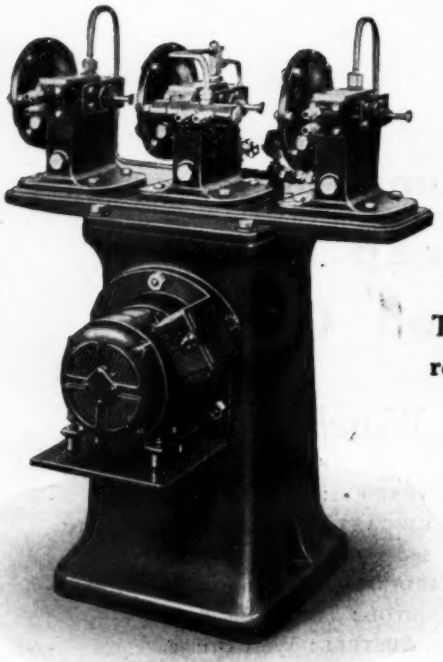

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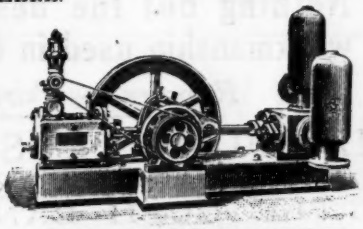

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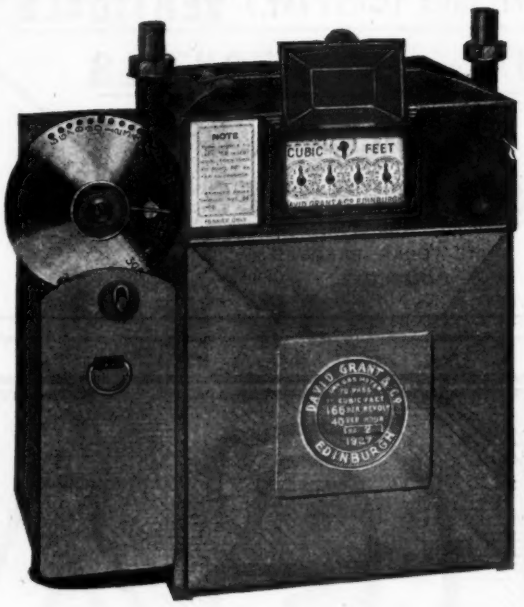


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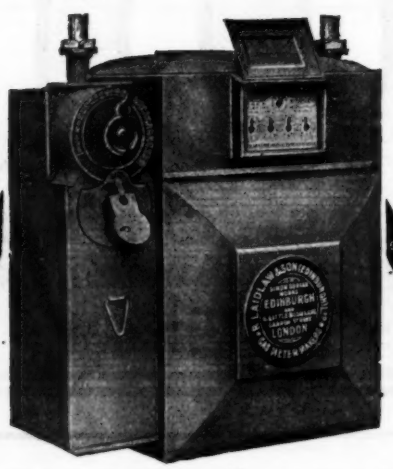


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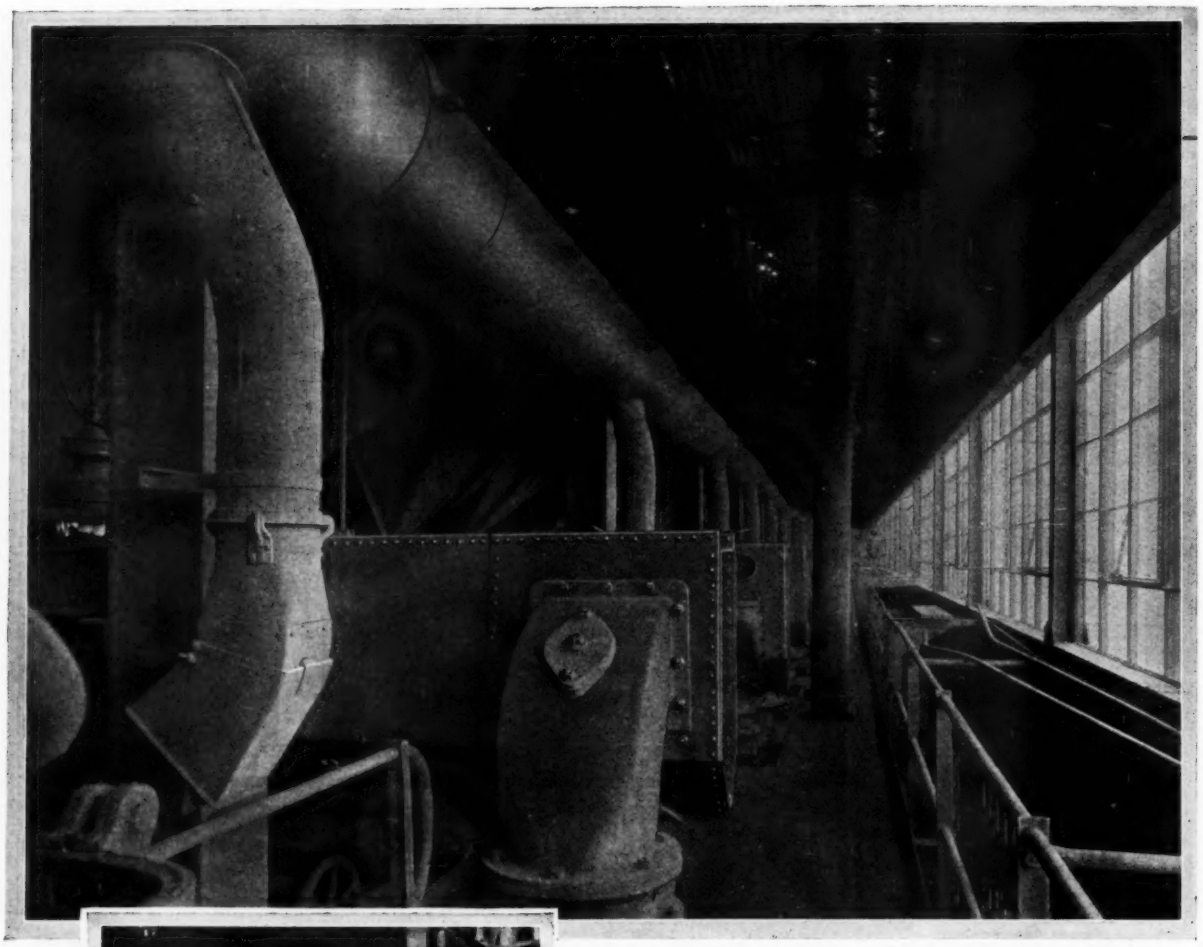
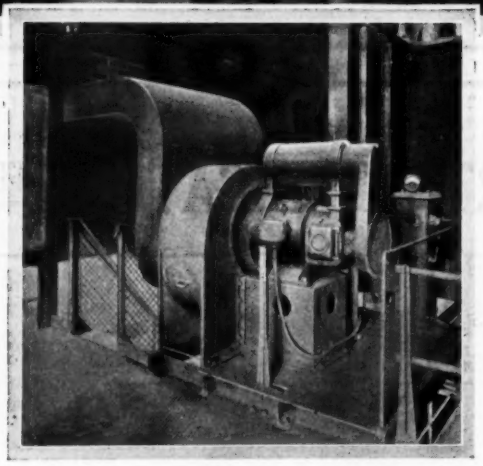


Part of the "Keith-Blackman" Cold Air Douche Plant in one of the Vertical Retort Houses of the Nine Elms Works of the Gas Light & Coke Co.



One of the two "Keith" 22½" Fans which supply the air for the "Keith-Blackman" Cold Air Douche.

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YOUR men, breathing cooling fresh air from outside the Retort House instead of the fume-laden atmosphere within, will be in a condition to carry out their arduous duties with greater energy and efficiency.

The plant illustrated consists of two 22½" "Keith" Centrifugal Fans, absorbing 3 h.p., and each discharging about 8400 cu.ft. of air per minute. The fans draw fresh air from outside the house, on the coolest side, and force it through sheet metal mains run near the working positions and down 14 branch pipes dropped at intervals to the positions in which the men work. The working positions are not absolutely stationary, and to meet this condition each down-coming branch pipe is fitted with a swivelling and adjustable outlet so that the air can be delivered, within reason, to any position horizontal or vertical; *i.e.*, the outlet has a movement on the horizontal axis and also on the vertical axis. This enables each man to arrange the flow of cooling fresh air to just that position which best meets his particular requirements. The long view of the retort house indicates the run of the main duct and shows the beginnings of some of the downpipes, with one complete downpipe in the foreground.

We invite enquiries from all Gas Executives who are interested in this subject.

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